MEMBER OF THE A. B. C.

FIFTY-FIRST YEAR

PAPER TRADE JOURNAL

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY

ESTABLISHED IN 1872

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SEP 01 1922

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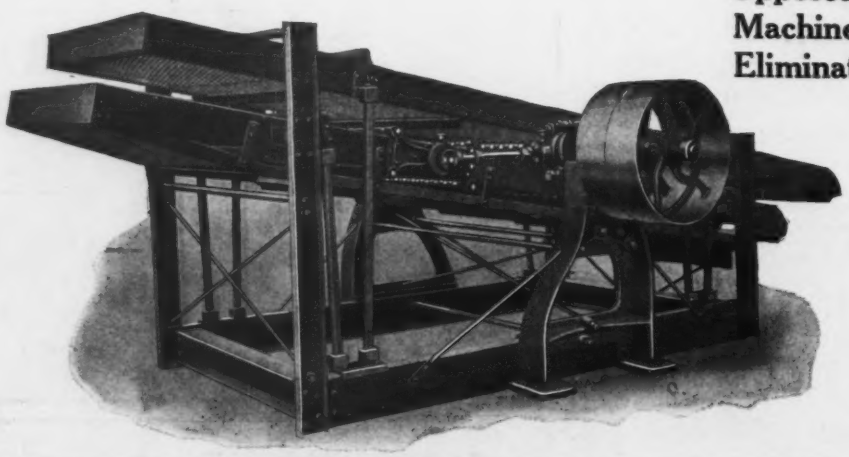
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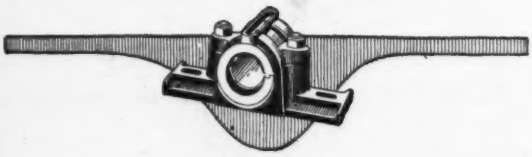

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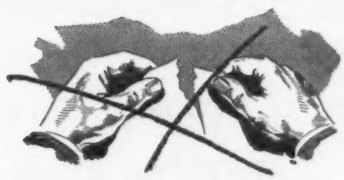

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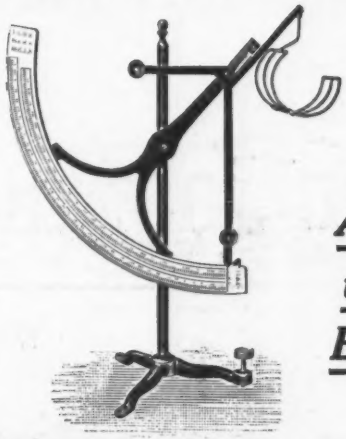

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Full Sheet Paper Scale

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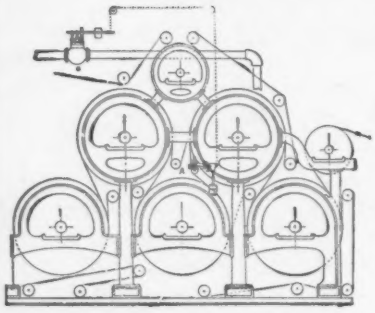

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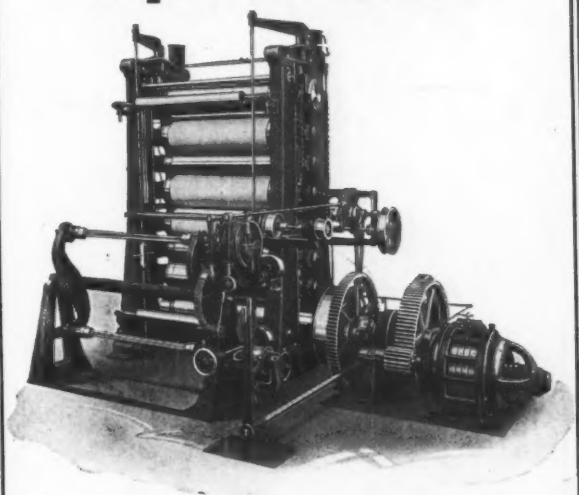

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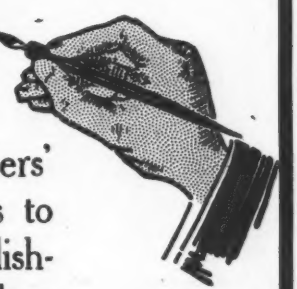

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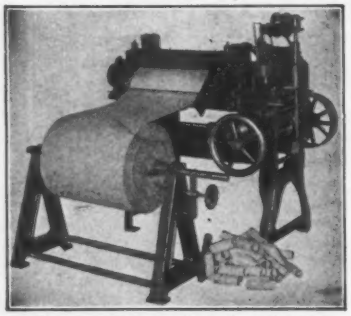
Automatic Tube Machines

For Making Tubes for Toilet Paper Rolls, Paper Towel Rolls



Capable of producing 3,600

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per hour direct from roll.

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are made at rate of 1,800 per hour. Substantially built and fully guaranteed.

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For all makes of Machines.

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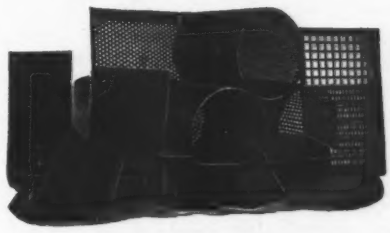
IN STEEL AND ALLOYED METALS
For Pulp and Paper Mills



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Light and Heavy Steel Plate Construction

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Quality Service
APPLETON Felts and Jackets

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TUBERS and BOTTOMERS for

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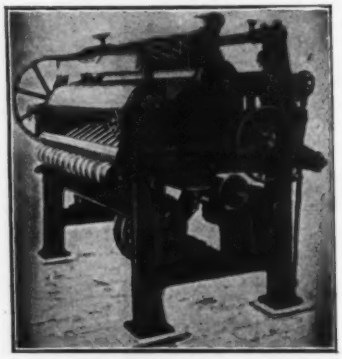

Revolving Paper Cutters—Rag Cutters—Cylinder Paper Machines—Washing and Beating Engines—Chilled Iron and Paper Calenders—Fan and Stuff Pumps—Engine Roll Bars and Bed Plates—

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THE RAINSTORM SHOWER PIPE—COLLAPSIBLE CORES

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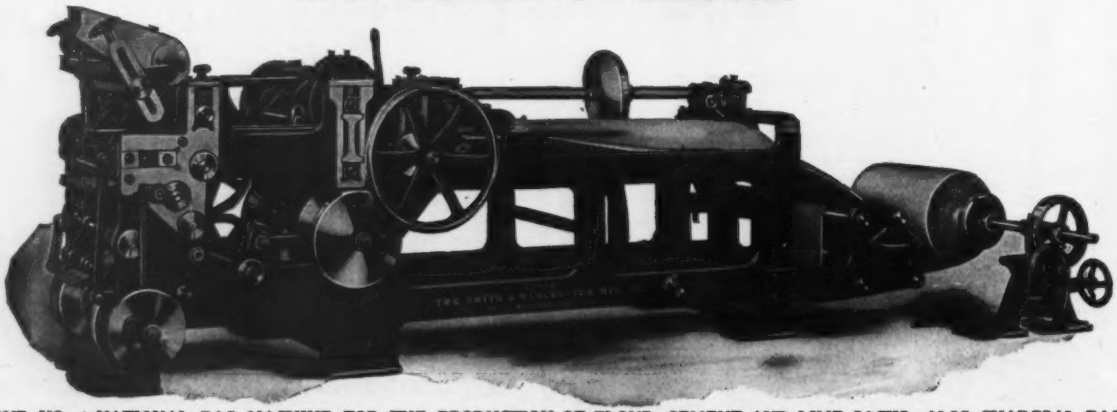

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QUALITY PRODUCTS
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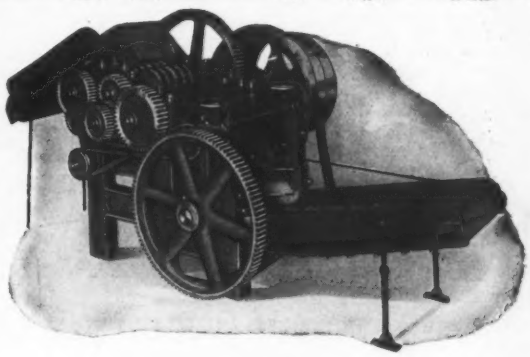

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With the PERKINS RAG CUTTER. So why cut rags by hand?

Write for full information as to its many advantages. Address Dept. P9.

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For paper rolls, made to pattern under shop names in four sizes as follows: CARD, 3"; MANILLA, 2⅛"; NEWS, 2½"; DRUG, 2⅛"; 1¾" in length, having 1" hole, and tumble polished when shipped. You should if possible, adjust your needs to these stock sizes, with prospect of prompt shipping in carlots or less, thereby avoiding serious delays in waiting for something special. Samples cheerfully furnished.

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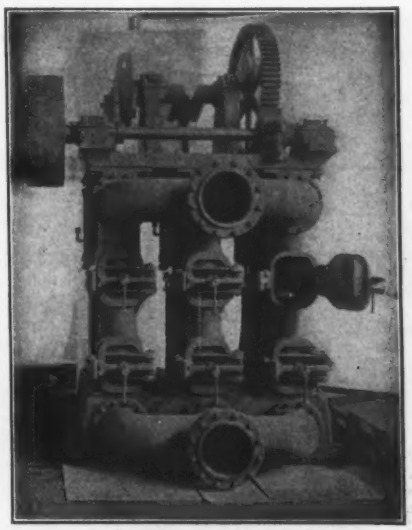
Builders of All Types of Paper Making Machines and Machinery



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Successful machines in operation are proof our work is built right.

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FINNISH CELLULOSE ASSOCIATION, HELSINGFORS, FINLAND

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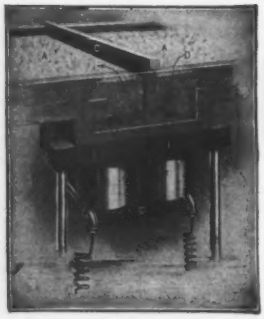
FINNISH WOOD PULP UNION, HELSINGFORS, FINLAND



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It consists of special magnetic surfaces of great power over which the paper stuff is made to pass. As a result, all the iron and many other foreign substances are completely extracted. Hundreds of these devices are in use daily and no one of them has failed to give complete satisfaction. Write us for Bulletins and full details.

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for PAPER MAKING

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Manufacturers of

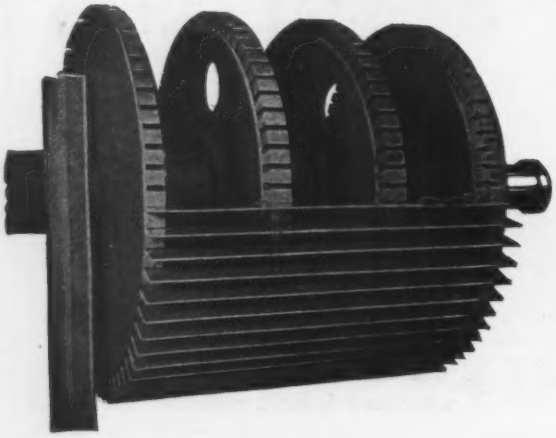
High Grade Brass and Bronze Screen Plates and Dandy Rolls

OLD PLATES CLOSED AND RECUT

DANDY ROLLS AND WATER MARKING

Secure Our Prices

We Can Please You



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Manufacturers of

BEATING and WASHING ENGINES
FLY BARS—BED PLATES—
MACHINE KNIVES

Our new KEYED TYPE BANDLESS ROLL is the final result of many Years of Experience.

May we not tell you about its many advantages?

We offer a full line of

COLORS

and furnish precise directions on application for

Beater Dyeing, Staining and Coating

Half a century's experience enables us to furnish goods answering requirements and to give reliable service

THE HELLER & MERZ CO.

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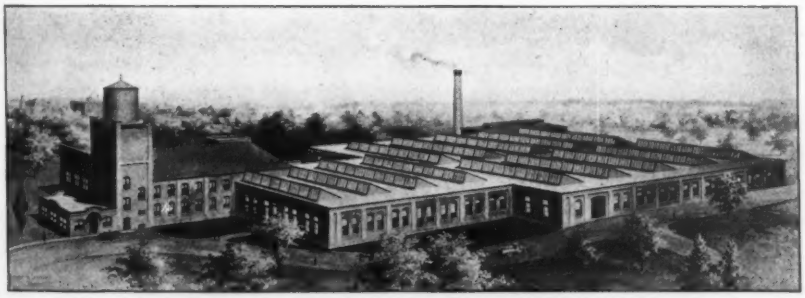

The same skill and knowledge which have won a reputation for the desirability and economy of Kenwood Felts and Tan Jackets, made at Albany, are applied at the Canadian Plant. Modern construction, latest improved machinery, fine power facilities and unlimited pure water, combined with the unrestricted wool markets of the world, and all backed by the full experience of Kenwood Mills of Albany, place this Canadian Mill in a splendid manufacturing position.

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F. C. HUYCK & SONS

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Kenwood Felts, Seamless Felts & Tan Jackets

are scientifically designed for openness. They will make a smooth, firm sheet and give long wear.

ROGERS WET MACHINE

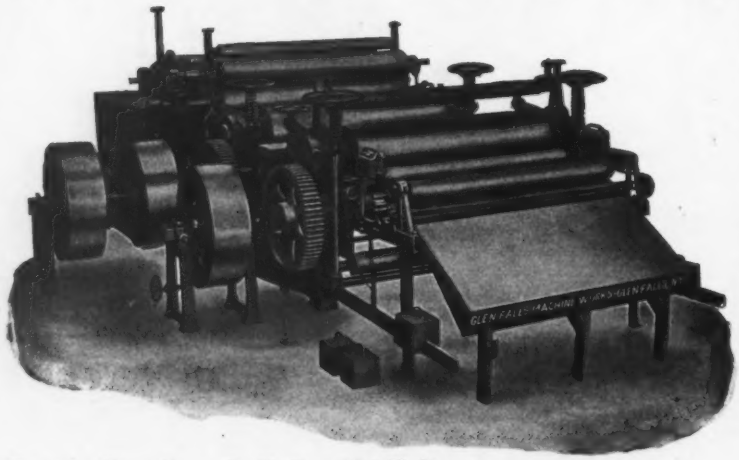

Illustration Shows Rogers Double Press Wet Machine

FOR CHEMICAL PULP—including Sulphite, Sulphate, Soda, also Cotton and Waste Paper fiber.

TYPES—Single and Double Press 72" wide.

CAPACITY—either type 25-30 tons air dry stock per 24 hours.

SHEETS produced by the Double Press Machine uniformly 48% dry. By the Single Press Machine uniformly 40% dry. There is no fold to contain excessive moisture. Sheets are handy size, 33"x36", and are folded once into most convenient bundles for storage, for the beater or for shipping. By this great capacity, high dry test, small amount of floor space per ton pulp produced, exceedingly low cost for labor and maintenance, users are assured that the machine will completely pay for itself within one year, and are promised a handsome return on their investment.

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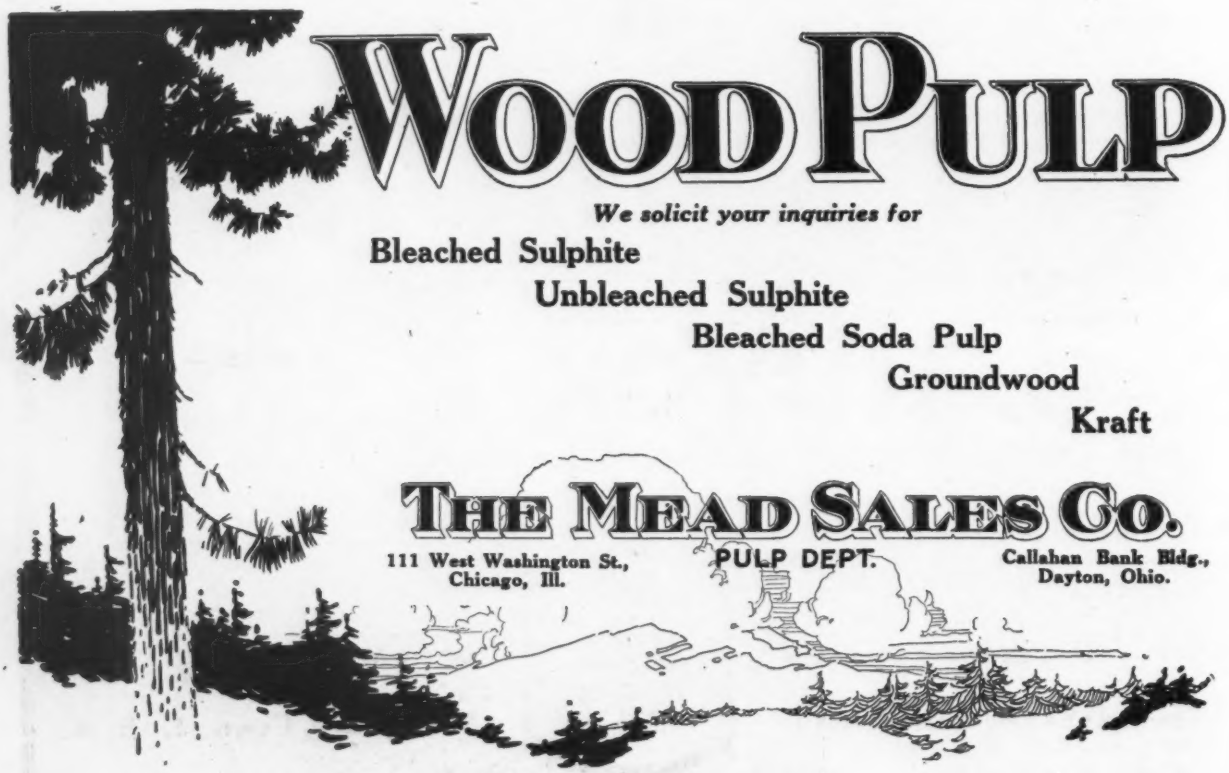

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each drink a cup—each cup a sale for you and at lowest cost of any cup on the market.

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Burt's Paper Drinking Cups are made of fine white paper, without wax to make drinks taste, and are reinforced so holders are not necessary. They are kept under glass and cannot be wasted or soiled before use.

Cups retail at one fourth cent—dispensers at five dollars.

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Paper Cup Division
Buffalo, N. Y.

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to a more uniform product. Speed and pressure are two big essentials in grinding pulp. These must be properly proportioned in order to secure the highest degree of results with the lowest consumption of power.

Recording Electric Tachometers
and
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automatically record the speed of the shafting and the pressure of the grinding stones. With the information furnished by the instruments, there is no need for guess-work.

The operator can immediately tell the speed and pressure by merely glancing at the Bristol chart. The superintendent has the same chart record on his desk the following morning. He can tell just what the conditions were for every hour of the previous day. The charts are always ready for inspection and are filed away for future reference and comparison.

Bulletin BE-303 will tell you about the most extensive line of Recording Instruments in the world. May we send it to you?

SEE OUR EXHIBIT at the EIGHTH NATIONAL EXPOSITION CHEMICAL INDUSTRIES GRAND CENTRAL PALACE NEW YORK CITY SEPT. 11-16 1922

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Our plants are located

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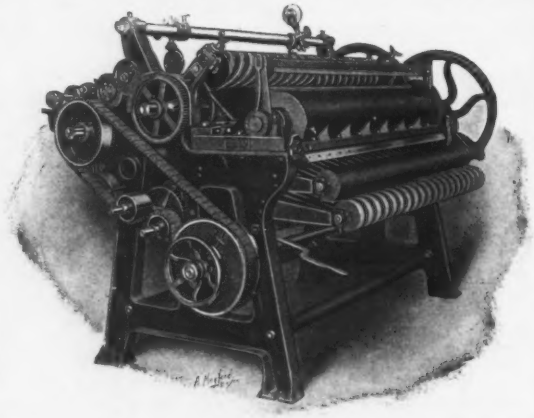
Elixman Paper Core Co.
CORINTH, N. Y.

2

Paper Cutters

Single, Duplex and Diagonal



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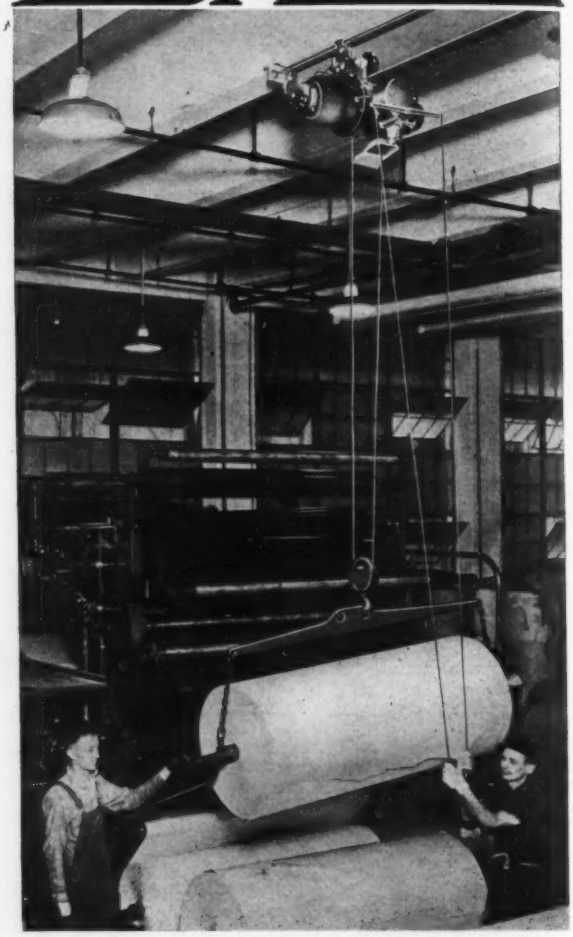
LIFT ABOUT



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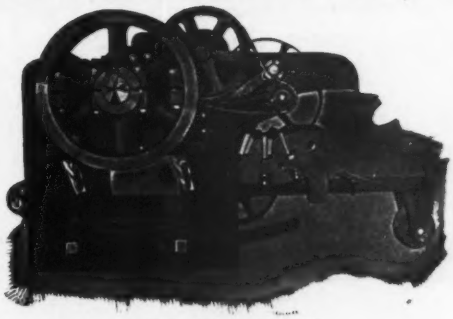

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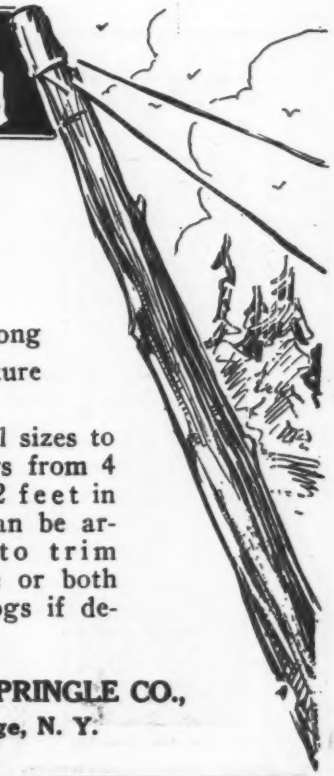

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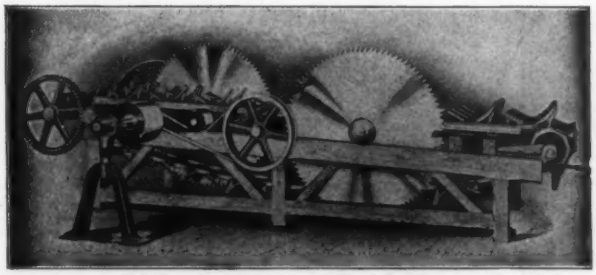
is the most efficient and the lowest cost method of reducing long logs to uniform short lengths suitable for further manufacture into pulp and paper.



Built in all sizes to handle logs from 4 feet to 32 feet in length. Can be arranged to trim either one or both ends of logs if desired.

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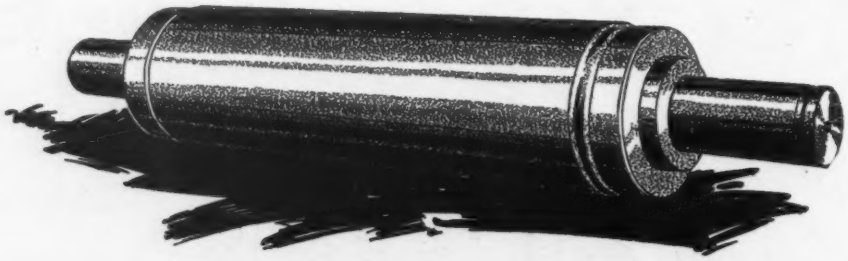

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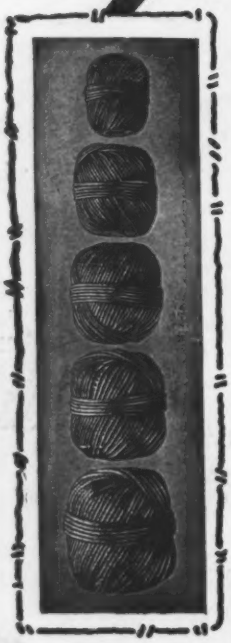

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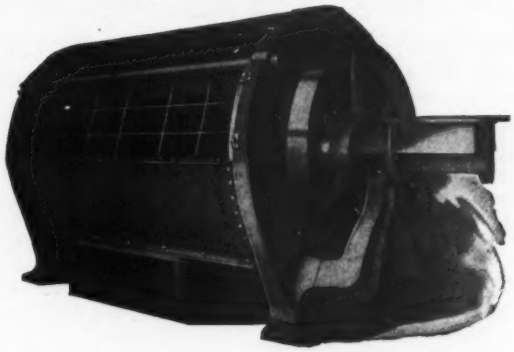

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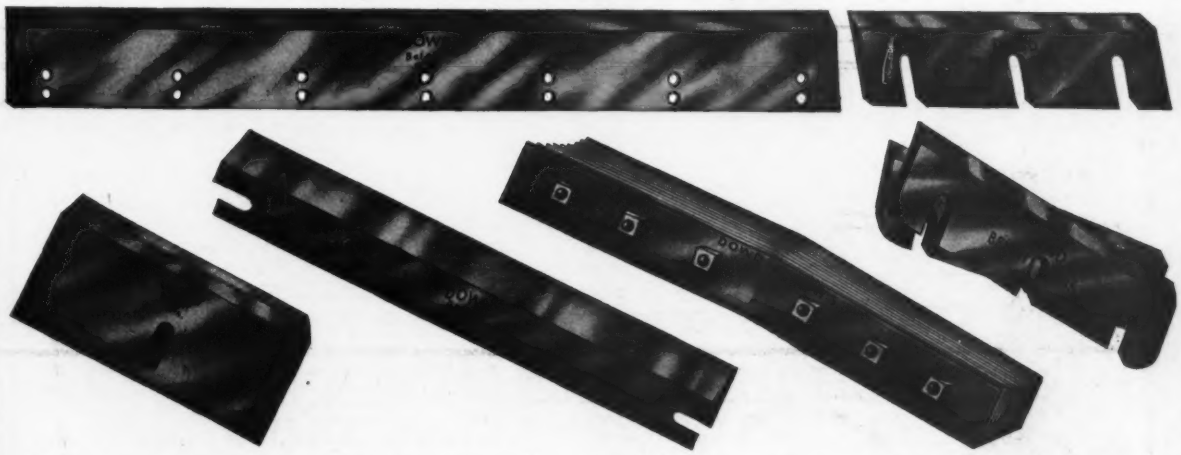

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THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY

FIFTY-FIRST YEAR

PUBLISHED EVERY THURSDAY BY THE

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Table of Contents

News of the Trade:

	PAGE
Report on Tariff Made by Conference Committee	22
Trinity Paper Mills to Have Plant in Dallas	23
Will Assist in Supplying Rubber Latex	23
Chemical Exposition Big Success	24
The Formation of Froth	26
Orders More Plentiful in Philadelphia Market	28
Paper Men Return from Abroad	28
Paper Box Men Provide for Associate Members	28
Charles Beck Machine Company Busy	28
Paper Business Improving in Tornoto	30
Will Utilize Waste for Fuel	30
Board Prices Advancing	30
Pulpwood Cut Will Be Enlarged	30
Quebec Government Grants Reduction in Timber Dues	32
Spanish River's Annual Report	32
New Mill to Start in January	32
Waste Paper Price Advances	32
Forestry Prizes Awarded	34
News of the Boston Trade	34
Diffuser Explodes at Advance Pulp Plant	34
New York Trade Jottings	36
Recent Incorporations	36
News of the Chicago Trade	36
Bids and Awards for Government Paper	36
Tentative Report on Paper Standardization	38
Continuous Causticization for Pulp Mills With Provision for the Recovery and Re-use of the Lime Sludge	44
To Investigate Dumping of Kraft Again	44
Report for Paper Testing by Government	46
Wants Forest Station for New England	46
Rumford Bag and Paper Mills Have Outing	46
To Intervene in Paper Mills Tariff Case	46
Japanese Visitors at Watertown	49
State May Take Pulpwood for Fuel Purposes	49
Paper Standardization Committee to Meet	49
Leo Shlick Occupying Larger Quarters	49
Imports and Exports of Paper and Paper Stock	68
Orono Paper Company Suit on Pulpwood Contract	72
Resigns From Nekonegan Corporation	72

Editorial:

	PAGE
The Chemical Exposition	48
An Improved Outlook	48
University Co-operation	49

Technical Section:

	PAGE
Fall Meeting of the Technical Association	51
Continuous Drum Filters in Pulp and Paper Mills	52
Application of Recording Instruments in Pulp and Paper Industry	54
Testing Colored Materials for Fastness-to-Light	56
Steel Belts and Their Application to the Solution of Conveying Problems	58
Rotary Filters for the Washing of Paper Pulp and for Filtering and Washing Caustic Lime Mud	60
Safety and Efficiency Appliances for the Boiler Plant	62
The Original Dryer Applied to Wall-Paper and Coated Paper	64
"Scott" Evaporator as Used in the Pulp Mill	65

Obituary:

	PAGE
James A. Muir	34

Market Review:

	PAGE
New York Market Review	70
Market Quotations	71
Miscellanoeous Markets	74

Want and For Sale Advertisements, Pages 76 and 77

XUM

REPORT ON THE TARIFF MADE BY CONFERENCE COMMITTEE

Coated Paper Manufacturers Score Victory—Casein Tariff Reduced to 2½ Cents Per Pound—Both Bleached and Unbleached Grades of Mechanical and Chemical Wood Pulp Remain on Free List—Tariff Schedules Announced for Papers and Books, Board, Tissue, Coated Paper, Writing and Note Paper, Envelopes, Etc.—Bill Now Under Consideration.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 13, 1922.—The tariff conferees of the Senate and House made their report to the two Houses of Congress on Tuesday, and it is expected that consideration of the bill will be begun in the House today.

The coated paper manufacturers won a victory over the agricultural bloc in that the rate on casein against which the manufacturers were waging war was reduced from 4 cents per pound to 2½ cents per pound. The casein paragraph as it was reported out of conference reads:

"PARAGRAPH 19.—Casein or lactarene, 2½ cents per pound." The conferees made a change in the bleaching powder rate so that that paragraph now reads:

"Bleaching powder or chlorinated lime, three-tenths of one cent per pound."

Mechanically ground wood pulp and standard news print were both left on the free list but the reciprocal clause was stricken out in both instances. The wood pulp paragraph now reads:

"Mechanically ground wood pulp, chemical wood pulp, unbleached or bleached." The news print paragraph reads: "Standard news print paper." Both of these items of course are on the free list. The paper schedule as it comes from conference with the items of special interest to the paper industry and as it will undoubtedly become law is as follows:

SCHEDULE 13
Papers and Books

PARAGRAPH 1301. Printing paper, not specially provided for, one-fourth of 1 cent per pound and 10 per centum ad valorem: Provided, That if any country, dependency, province, or other subdivision of government shall forbid or restrict in any way the exportation of (whether by law, order, regulation, contractual relation, or otherwise, directly or indirectly), or impose any export duty, export license fee, or other export charge of any kind whatsoever (whether in the form of additional charge or license fee or otherwise) upon printing paper, wood pulp, or wood for use in the manufacture of wood pulp, the President may enter into negotiations with such country, dependency, province, or other subdivision of government to secure the removal of such prohibition, restriction, export duty, or other export charge, and if it is not removed he may, by proclamation, declare such failure of negotiations, setting forth the facts. Thereupon, and until such prohibition, restriction, export duty, or other export charge is removed, there shall be imposed upon printing paper provided for in this paragraph, when imported either directly or indirectly from such country, dependency, province, or other subdivision of government, an additional duty of 10 per centum ad valorem and in addition thereto an amount equal to the highest export duty or other export charge imposed by such country, dependency, province, or other subdivision of government, upon either an equal amount of printing paper or an amount of wood pulp or wood for use in the manufacture of wood pulp necessary to manufacture such printing paper.

Board, Wall Board and Pulp Board

PARAGRAPH 1302. Paper board, wallboard, and pulpboard, including cardboard, and leather board or compress leather, not laminated, glazed, coated, lined, embossed, printed, decorated or ornamented in any manner, not cut into shapes for boxes or other articles and not specially provided for, 10 per centum ad valorem pulpboard in rolls, for use in the manufacture of wallboard, 5 per centum ad valorem: Provided, That for the purpose of this Act any of the foregoing less than nine one-thousandths of an inch in thickness shall be deemed to be paper; sheathing paper, roofing paper, deadening felt, sheathing felt, roofing felt or felt roofing, whether or not saturated or coated, 10 per centum ad valorem. If any country, dependency, province, or other subdivision of government imposes a duty on any article specified in this paragraph, when imported from the United States, in excess of the duty herein provided, there shall be imposed upon such article, when imported either directly or indirectly from such country, dependency, province, or other subdivision of government, a duty equal to that imposed by such country, dependency, province, or other subdivision of government on such article imported from the United States.

PARAGRAPH 1303. Filter massé or filter stock, composed wholly or in part of wood pulp, wood flour, cotton or other vegetable fiber, 20 per centum ad valorem; indurated fiber ware, masks composed of paper, pulp or papeir-mâché, manufactures of pulp, and manufactures of papier-mâché, not specially provided for (1130) 25 per centum ad valorem.

Tissue Paper

PARAGRAPH 1304. Papers commonly known as tissue paper, stereotype paper, and copying paper, india and bible paper, condenser paper, carbon paper, coated or uncoated, bibulous paper, pottery paper, tissue paper for waxing, and all paper similar to any of the foregoing, not specially provided for, colored or uncolored, white or printed, weighing not over six pounds to the ream of four hundred and eighty sheets on the basis of twenty by thirty inches, and whether in reams or any other form, 6 cents per pound, and 15 per centum ad valorem; weighing over six pounds and less than ten pounds to the ream, 5 cents per pound and 15 per centum ad valorem; india and bible paper weighing ten pounds OR MORE and less than eighteen pounds to the ream, 4 cents per pound and 15 per centum ad valorem; crêpe paper, 6 cents per pound and 15 per centum ad valorem: Provided, That no article composed wholly or in chief value of one or more of the papers specified in this paragrph shall pay a less rate of duty than that imposed upon the component paper of chief value of which such article is made.

Coated Papers

PARAGRAPH 1305. Papers with coated surface or surfaces, not specially provided for, 5 cents per pound and 15 per centum ad valorem; papers with coated surface or surfaces, embossed or printed otherwise than lithographically, and papers wholly or partly covered with metal or its solutions (except as herein provided), or with gelatin, linseed oil cement, or flock, 5 cents per pound and 15 per centum ad valorem; papers, including wrapping paper, with the surface or surfaces wholly or partly decorated or covered with a design, fancy effect, pattern, or character, except designs, fancy effects, patterns, or characters produced on a paper machine without attachments, or produced by lithographic process, 4½ cents per pound, and in addition thereto, if embossed, or printed otherwise than lithographically, or wholly or partly covered with metal or its solutions, or with gelatin or flock, 17 per centum ad valorem: Provided, That paper wholly or partly covered with metal or its solutions, and weighing less than fifteen pounds per ream of four hundred and eighty sheets, on the basis of twenty by twenty-five inches, shall pay a duty of 5 cents per pound and 17 per centum ad valorem; gummed papers, not specially provided for, including simplex decalcomania paper not printed, 5 cents per pound; cloth-lined or reinforced paper, 5 cents per pound and 17 per centum ad valorem; papers with paraffin or wax-coated surface or surfaces,

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vegetable parchment paper, grease-proof and imitation parchment papers which have been supercalendered and rendered transparent or partially so, by whatever name known, all other grease-proof and imitation parchment paper, not specially provided for, by whatever name known, 3 cents per pound and 15 per centum ad valorem; bags, printed matter other than lithographic, and all other articles, composed wholly or in chief value of any of the foregoing papers, not specially provided for, and all boxes of paper or papier-mâché or wood covered or lined with any of the foregoing papers or lithographed paper, or covered or lined with cotton or other vegetable fiber, 5 cents per pound and 20 per centum ad valorem; plain basic paper for albumenizing, sensitizing, baryta coating, or for photographic processes by using solar or artificial light, 3 cents per pound and 15 per centum ad valorem; albumenized or sensitized paper or paper otherwise surface coated for photographic purposes, 3 cents per pound and 20 per centum ad valorem; wet transfer paper or paper prepared wholly with glycerin or gylcerin combined with other materials, containing the imprints taken from lithographic plates or stones, 65 per centum ad valorem.

Writing and Note Papers

PARAGRAPH 1307. Writing, letter, note, drawing, handmade paper and paper commercially known as handmade paper and machine handmade paper, japan paper and imitation japan paper by whatever name known, Bristol board of the kinds made on a Fourdrinier machine, and ledger, bond, record, tablet, typewriter, manifold, and onionskin and imitation onionskin paper, calendered or uncalendered, weighing seven pounds or over per ream, and paper similar to any of the foregoing, 3 cents per pound and 15 per centum ad valorem; but if any of the foregoing is ruled, bordered, embossed, printed, lined, or decorated in any manner, other than by lithographic process, it shall pay 10 per centum ad valorem in addition to the foregoing rates: Provided, That in computing the duty on such paper every one hundred and eighty-seven thousand square inches shall be taken to be a ream.

Paper Envelopes

PARAGRAPH 1308. Paper envelopes not specially provided for shall pay the same rate of duty as the paper from which made and in addition thereto, if plain, 5 per centum ad valorem; if bordered, embossed, printed, tinted, decorated, or lined, 10 per centum ad valorem; if lithographed, 30 per centum ad valorem.

PARAGRAPH 1309. Jacquard designs on ruled paper, or cut on Jacquard cards, and parts of such designs, 35 per centum ad valorem; hanging paper, not printed, lithographed, dyed, or colored, 10 per centum ad valorem; printed, lithographed, dyed, or colored, 1½ cents per pound and 20 per centum ad valorem; wrapping paper not specially provided for, 30 per centum ad valorem; blotting paper, 30 per centum ad valorem; filtering paper, 5 cents per pound and 15 per centum ad valorem; paper not specially provided for, 30 per centum ad valorem.

Papers and Paper Boards

PARAGRAPH 1313. Papers and paper board and pulpboard, including cardboard and leatherboard or compress leather, embossed, cut, die-cut, or stamped into designs or shapes, such as initials, monograms, lace, borders, bands, strips, or other forms, or cut or shaped for boxes or other articles, plain or printed, but not lithographed, and not specially provided for; paper board and pulpboard, including cardboard and leatherboard or compress leather, laminated, glazed, coated, lined, printed, decorated, or ornamented in any manner; press boards and press paper, all the foregoing, 30 per centum ad valorem; test or container boards of a bursting strength above sixty pounds per square inch by the Mullen or the Webb test, 20 per centum ad valorem; stereotype-matrix mat or board, 35 per centum ad valorem; wall pockets, composed wholly or in chief value of paper, papier-mâché or paper board, whether or not die-cut, embossed, or printed lithographically or otherwise; boxes, composed wholly or in chief value of paper, papier-mâché or paper board, and not specially provided for; manufactures of paper, or of which paper is the component material of chief value, not specially provided for, all the foregoing, 35 per centum ad valorem

Trinity Paper Mills to Have Plant in Dallas

[FROM OUR REGULAR CORRESPONDENT]

DALLAS, Tex., September 11, 1922.—The Trinity Paper Mills Corporation, a $6,000,000 organization backed principally by New York capital, will erect a $500,000 paper mill in Dallas and will manufacture high grade paper from cotton linters, according to a telegram received from Adam H. Davidson of New York, who will become treasurer of the company. Linter for the project will be drawn from the cotton oil mills in Dallas and the rest of the State, according to P. H. Diggle, secretary of the company. The capital stock has been fully subscribed, Mr. Davidson said.

Officers are Dallas men, as follows: J. V. Webb, president and treasurer; J. M. Irwin, vice-president; P. H. Diggle, secretary, and Adam H. Davidson and W. M. Cannon, directors.

"While the mill in Dallas will not be the largest paper mill in the country by any means, it will be a distinct addition to the industries of the nation, as it will be the only mill manufacturing paper from cotton linters in America with the exception of the mill now operating with a four-ton-a-day capacity at Commerce, Tex.," said Mr. Diggle.

"Dallas will be the home office of a system of such mills that are to be constructed in all the Southern cotton producing States, and direction of additional mills will be in the hands of the Dallas office," he said.

Plans for the mill have been drawn up and selection of the site is expected soon. However, construction of the mill may not begin before the first of 1923, it was announced.

The Dallas mill will have a capacity of between twenty and thirty tons of finished high-grade paper a day, and it is expected that the commodity will be distributed all over the United States, the officers said. A ten-acre plot of ground will be required for the mill site.

The Trinity Paper Mills of Dallas developed the process for manufacturing pulp from cotton linters and has been shipping much of its output to Eastern paper mills, it is pointed out in a letter from Mr. Davidson. The desire of the company to locate in Dallas a paper mill to handle the pulp and turn it out as a finished paper led to the organization of the Trinity Paper Mills Corporation, and among the stockholders are a number of well known New York capitalists.

Referring to the establishment of the mill in Dallas, Mr. Davidson said: "This will mean the building up of a large industrial business throughout the entire South, utilizing what is now practically a waste product from the South's greatest crop, making that crop even more stabilized than heretofore, furnishing labor for skilled and unskilled workers throughout the South, and furnishing a large percentage of the South's tremendous demand for high-grade white papers from the South's own factories."

Financing and sale of the securities of this corporation has been handled entirely by the Dallas Guarantee Mortgage Company, through Mr. Davidson, the officer said.

Will Assist in Supplying Rubber Latex

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 13, 1922.—The Paper Division of the Department of Commerce has received notice that the British inventor of rubber latex, about which American paper manufacturers have expressed so much interest, is able to supply the latex in any quantity up to a thousand gallons, to be shipped from Singapore. If satisfactory arrangements cannot be made directly with the inventor, the paper division has offered to help the manufacturers obtain what they wish.

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CHEMICAL EXPOSITION IN NEW YORK IS BIG SUCCESS

Mammoth Display of Modern Chemistry Fills Four Floors of Grand Central Palace—Over 400 Exhibitors Participate —Speeches, Moving Pictures and Round-Table Meetings Are Features of Program—Technical Association Holds Meeting Wednesday Afternoon, George E. Williamson, President, Presiding—Session Is Well Attended—Chemical Manufacturers Provide Unique Displays.

Newest developments in the field of chemistry and allied industries were emphasized at the Eighth Annual Chemical Exposition held this week at the Grand Central Palace. Recent inventions, some of which are at least theoretically revolutionizing, were exhibited, and many improvements upon modern methods of production were suggested in varied lines of industry. One entire afternoon, Wednesday, was devoted to the pulp and paper industry.

The exhibits numbered over 400, the main body of displays being taken up by chemical raw materials and machinery of the various industries controlled or influenced by chemistry. Programs consisting of speeches by well-known scientists and business men, moving pictures, and round-table discussions were cheduled.

Separate meetings, set for succeeding days, were given over to the Synthetic Organic Chemical Manufacturers, the Pulp and Paper Industry, the Technical Photographic and Miscroscopical Society, the American Ceramic Society, and the American Chemical Society. A series of dinners also were arranged during the week.

Technical Association Meeting

On Wednesday afternoon at 2 o'clock, George E. Williamson, president of the Technical Association of the Pulp and Paper Industry, took the chair to preside over the "Paper Meeting." An interesting and varied program was offered, the meeting being exceptionally well attended and the list of speeches was augmented by the running off of two motion pictures having a direct bearing on the trade. By courtesy of the G. H. Mead Company, eight reels showing the manufacture of news print paper at the Spanish River Pulp and Paper Mills, Limited, in Ontario, were exhibited, and by courtesy of the U. S. Bureau of Mines and the Texas Gulf Sulphur Company, the story of the sulphur industry was depicted. These graphic illustrations of productive methods considerably aided the understanding of certain seasonal and mechanical tie-ups in the industries concerned.

Paper Program

The complete program of the "Paper Meeting" follows. Many of the speeches may be found in the Technical Section of the PAPER TRADE JOURNAL, and others will be published in succeeding issues.

"Safety and Efficiency Appliances for the Boiler Plant," by W. C. Edge, of the Paul B. Huyette Company.

"Trimbey and Tibbitts' Proportioning and Measuring System for Paper Stock," by E. J. Trimbey, of the Trimbey Machine Works.

"Rotary Filters for Washing of Paper Pulp and for Filtering and Washing Caustic Lime Mud" (illustrated), by George D. Dickey, of the Industrial Filtration Corporation.

"Efficiencies and Economies in Washing Black Liquor for Digested Soda and Sulphite Stock," by H. A. Morrison, of the Oliver Continuous Filter Company.

"The Merco Nordstrom Plug Valve," by L. D. Mills, of the Merrill Company.

"Testing Colored Materials for Fastness to Light," by H. S. Thayer, of the Altas Electrical Devices Company.

"Instruments for Promoting Efficiency in the Paper Mill," by A. E. Campbell, of the Schaeffer & Budenberg Manufacturing Company.

"The Carbon Dioxide Record of Combustion Efficiency," by C. C. Phelps, of the Uehling Instrument Company.

"Steel Belts and Their Application to Conveying Problems," by Harry Carlson, of Sandvik Steel, Inc.

"The Scott Evaporator as Used in the Pulp Mill for Recovering Soda from Spent Liquors," by H. Austin, of Ernest Scott & Co.

"Application of Recording Instruments in Pulp and Paper Industry," by L. G. Bean, of the Bristol Company.

Manufacturers' Exhibits

Among the 400 manufacturers of chemicals and equipment represented at this mammoth convention, the following are some of the more prominently known in the technical and industrial phases of paper manufacture, together with a brief description of the appliances featured in their exhibits:

Westinghouse Electric & Mfg. Co.

The display of the Westinghouse Electric and Manufacturing Company, conducted by S. H. Pittman, featured electrical devices for the paper mill and power plant, including safety switches, electric furnaces, space heaters, small induction motors, and Frankel solderless connectors. The booth was surrounded by miniature electric lamp posts, designed by the George Cutter Works, of South Bend, Ind.

Texas Gulf Sulphur Co.

The Texas Gulf Sulphur Company had an instructive exhibition of photographs, showing the methods employed in sulphur production. Several interesting photos were devoted to the world's largest block of sulphur, containing more than a million tons of brimstone and rising to a height of 55 feet. A. S. Cosler was in charge of the exhibit.

Thwing Instrument Co.

Dr. Charles Burton Thwing officiated over the booth at which various Thwing recorders and testers were demonstrated. Among other devices, Dr. Thwing pointed out the uses of Thwing Precision temperature and draft recorder for the paper mill power plant; the basis weight scale and moisture-test scale, and the Elmendorf paper tester.

Talc and Soapstone Producers' Assn.

The Talc and Soapstone Producers' Association, of Washington, D. C., conducted an interesting talc display, outlining its several uses in finished manufactures. Mr. Boardman, president of the Eastern Talc Company, was in charge of the booth.

Sandvik Steel, Inc.

A novel innovation was featured in the display of Sandvik Steel, Inc., where a miniature working model of the steel belt conveyor was presented on a scale of 1:20. An especially made, little steel belt was operated by a diminutive motor in the environment which would surround this attachment in actual mill use. H. Carlson directed the construction of the model and had charge of the demonstration.

Atlas Electric Devices Co.

The Atlas Electric Devices Company showed the efficiency of its "Fade-Ometer" in the testing of textiles and paper for color fastness. The display was the source of much interest due to the unique appearance of the device.

Nash Engineering Co.

Nash Engineering Company, of South Norwalk, Conn., featured an interesting display of "Hytor" vacuum pumps, which may be adapted to flat boxes in the paper mill as well as to felt or Fourdrinier wire machines. The exhibit, in charge of Mr. G. B. Wright and Thomas H. Savery, Jr., of Chicago, the Nash representative in the paper field, also included a working model of the company's dryer exhaust unit, which exhausts condensation and air from cal-

XUM

ender rolls. This device consists of a combination vacuum pump and centrifugal pump, mounted on a single shaft and operated by the same motor.

Mathieson Alkali Works

The Mathieson Alkali Works, of 25 West 43rd street, devoted their booth to a model illustration of the Mathieson system for preparing bleach liquor from liquid chlorine. The demonstration pointed out the advantages in shipping chlorine in one-ton containers and mixing the liquor in submerged tanks in preference to the "tower" method. James H. MacMahon was in charge of the exhibition.

Pennsylvania Salt Mfg. Co.

The Pennsylvania Salt Manufacturing Company, of 41 Park Row, New York, furnished an unique exhibit of industrial chemicals by means of a novel lighting effect. Large glass jars of sulphate of alumina, ammonia alum, caustic soda, and other substances were arranged on tables with a strong light illuminating the display from beneath. Cylinders of liquid chlorine served as gate-posts for the booth and a replica of the Liberty Bell was shown, made entirely from iron-free sulphate of alumina. R. James was in charge of the exhibit Tuesday and was succeeded later in the week by Mr. Bartlett, Mr. Butterworth and other officers of the company.

The Bristol Co.

The Bristol Company, of Waterbury, Conn., whose exhibit was in charge of C. H. Williamson, as well as several assistants, demonstrated the various uses in the paper mill of Bristol pressure gauges, thermometers, thermo-electric pyrometers, long-distance liquid level recorders, electric time recorders, etc. Among the features of the display were various sizes of motor-operated Bristol-Fuller valves, designed to effect considerable economy in the consumption of oil or gas.

Electro-Bleaching Gas Co.

One of the most interesting attractions was that of the Electro Bleaching Gas Company, 18 East 41st street, New York, which consisted of a model bleaching plant. The miniature was five years in process of construction and was complete to the most minute detail. The method of producing Bleached Liquor by Liquid Chlorine, a process used by 18 prominent paper manufacturing plants, was stressed in the company's exhibit. S. W. Jacobs was in charge.

B. F. Sturtevant Co.

Under Lucien Buck, manager of the Industrial Drying Department, the B. F. Sturtevant Company, 52 Vanderbilt avenue, New York, displayed various drying systems, including the Vapor Absorption System. This method of drying, according to Mr. Buck, is widely used, the system having, by a series of new patents, attained a perfection beyond that of any previous drying device.

Bausch & Lomb Optical Co.

Bausch & Lomb Optical Company, Rochester, N. Y., exhibited, through Carl L. Oswald, of Washington, two types of "Colorimeters"—machines to test color. They also presented a "Nephelometer," a device to examine paper fillers and sizes in the general grades of paper. Mr. Oswald also showed microscopic methods of measuring the length and width of fibers.

Yarnall-Waring Co.

The "V-Notch Meter," applicable to the measurement of black soda liquor and bleaching liquors, was demonstrated by the Yarnall-Waring Company, of Philadelphia. The company also displayed carbon dioxide recorders for use in the paper mill power plant. L. G. Chase, 90 West street, was the guardian of the Yarnall-Waring booth.

General Electric Co.

The General Electric Company made a feature of its safety controls and Solenoid Valves controlling the flow of liquids. Mr. Hollister, of Schenectady, N. Y., and R. F. Newell and E. Von Steeg, of the New York office, demonstrated for General Electric. The company also pushed an electric boiler adapted for paper mill use in localities where water power is plentiful and more easily obtainable than coal.

The Container Club

A display by the Container Club, an association of 25 corrugated and solid-fiber box manufacturers, consisted of various types of corrugated packing boxes sent in by various members from all parts of the country. The demonstration was designed to show shippers how fiber and corrugated boxes are adaptable to shipping of all types of merchandise. The exhibit was conducted by J. W. Webb.

Technical Photographic and Microscopical Society

The Technical Photographic and Microscopical Society held its novel display under the direction of its founder, John H. Graff, of the Brown Company. Among the many exhibits were samples of photomicroscopic work in the analysis of wood fibers and the study of the elements of wood

Diamond State Fibre Co.

Diamond State Fibre Company, 111 Broadway, New York, exhibited a line of sheet, rod and tube fibers, which was augmented by a display board showing many of the applications of these articles. The process of manufacture was described and demonstrated in detail. C. M. Bogart, the company's sales manager in the East, also showed "Celon," a new product extensively used in the radio field.

Morse Chain Co.

The biggest strand of chain used in power transmission—a strand with a three-inch pitch and twenty-four inches wide—was displayed by the Morse Chain Company. This booth also showed Jordan Pumps for paper machines, emphasizing the advantages of the Morse Rocker Joint. The "Rotoscope," a slow motion device of novel design, enabled those interested to make a close survey of Morse chains in actual use and while running at a high rate of speed. Mr. Anderson, the New York manager of the company, officiated at the Morse booth.

Price Increases on German Paper

German paper prices rose 15 per cent in July, over June, and an average per cent of 50 per cent more August 1. Printing paper advanced 45 per cent, and other grades from 50 per cent to 60 per cent. Further substantial increases are probable.

Aside from advances, reflecting inflation in coal, freights, etc., wood pulp is scarce. When the mark was 350 to 400 to the dollar, pulpwood cost 200 times pre-war. It has risen faster than mark has depreciated, though lumber trade is but slightly affected by increased production costs applying to other lines. State forest administrations have advised that they will follow price policy of private industry, and as this amounts to nullification of all anti-profiteering laws, there is no limit to what may be demanded for pulpwood.

Demand for paper in Berlin is active. Advances, however, are restricting new business. Some factories promise delivery only after five or six months. Little foreign business is on hand, as before recent drop in the mark home prices were close to international values.

Goes With American Paper Mills

Harry D. Craig, formerly assistant managing director of the New York Employing Printers' Association, has just joined the sales force of the American Paper Mills Corporation, who are removing from their quarters at 237 Lafayette street to larger ones at the corner of 27th street and Eleventh avenue.

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FORMATION OF FROTH*

The formation of froth is one of the things that must be combated in the making of paper on the papermaking machine. This phenomenon is dependent on the composition of the paper stuff and on the treatment it receives before it comes to the papermaking machine. There are quite a number of factors which are of importance in promoting or retarding the formation of foam. Very often it is quite difficult for the papermaker to prevent this disadvantageous condition from arising in the process of manufacturing paper.

Formation of Froth Spots

Froth or foam consists of air bubbles, which are surrounded or covered with a slimy film. An analysis of this mass of air bubbles shows that it is constituted of fibers, rosin size, coloring matters, etc. On ashing a content of 3 per cent ash is obtained.

The formation of the froth takes place on the screen of the papermaking machines and also before the paper stuff reaches the same. When the resulting bubbles are not held back by the slices, then they reach the wire and hinder the felting of the fibers to produce a uniform sheet of paper. When the bubbles break, whether it be spontaneously or, for example, through the action of the dandy-roll, round, transparent spots—the so-called froth-spots—are formed on the paper, due to the fact that the bubbles do not contain a sufficient amount of fiber to fill up the hole, originally occupied by the bubbles before they broke.

Main Causes of the Formation of Froth

The principal causes of the formation of froth are enumerated as follows:

First. One cause for this phenomenon is to be found in the factory water. When mineral acids are added to this water, there will result an evolution of carbon dioxide in greater or less degree, dependent on the amount of calcium carbonate or magnesium carbonate that is contained in the water. These form on the surface of the paper and are covered with a film of fibers, size, etc.

Second. An excess of size will promote the formation of foam.

Third. Formation of foam will be enhanced by the reuse of the back water.

Fourth. The use of various dyestuffs in the coloring of the paper, such as Orange D, Scarlet and others, appear to promote the formation of foam.

Fifth. The same effect is produced when fresh pine-wood pulp is employed.

Sixth. A certain amount of froth will be formed when the paper stuff passes from one apparatus into the other. When the paper stuff is allowed to flow into a vessel rapidly or when it is permitted to fall into it from a height, it is very apt to entrain a certain amount of air. Such a condition is very propitious for the formation of foam, and should be avoided.

Seventh. When straw cellulose, which has been treated with steam, is employed in making the paper stuff composition, the danger of frothing is great.

Eighth. The heating of the paper stuff in the feed-box, a practice which is common, when working with very viscous paper stuff, will be very effective in promoting the formation of froth.

Ninth. Constant vigorous agitation of the paper stuff in the vats for a considerable length of time will also have the same result.

Tenth. When the agitator is rotated too rapidly, a layer of foam will be formed on the surface of the paper stuff.

Eleventh. Too rapid rotation of the knot catcher or too strong beating, shaking, etc., also conducive to the formation of foam.

Twelfth. In the hollander itself foam can be developed in the grinding of weighted paper stuff, animal sizing, etc.

There are still quite a number of other factors, which are of importance in this connection, but they do not possess sufficient weight to be treated any further at this point. The results of foaming are faulty paper, loss of cellulose, filling and coloring materials. In the case of the better grades of paper, the formation of foam-spots on the surface is quite a detriment.

Prevention of Frothing

If the frothing or foaming is to be prevented or decreased, it is first necessary to make a very thorough and careful investigation to determine what causes are present that give rise to this condition. In the first place the speed of the agitator is tested. This should not rotate any faster in any case than what is absolutely necessary to keep the paper stuff in suspension. The speed should not be greater than five revolutions per minute under any conditions of operation. In order to avoid the admixture of air with the stream of paper stuff, in running out of the vat into the sand catcher, it is essential that the stream is not made to fall quite a distance through the air. Rapid rotation or beating of the knot catcher is also to be avoided. In order to determine whether the formation of froth is due to an excess of rosin size, the back water is tested with litmus paper. An alkaline reaction indicates an excess of rosin size, and in that case the formation of foam is very apt to ensue. This condition can be remedied by adding a definite amount of alum or aluminum sulphate solution to the vat. The paper stuff should run quietly out of the feed box on to the wire screen. The slices serve to remove part of the foam that forms on the screen. Furthermore, spray nozzles are provided in front of and between the slices for the purpose of destroying the foam in this manner.

Frothing at the Dandy Roll

Then again frothing can take place at the dandy-roll. This can be prevented at this point by the use of a steam pipe, provided with fine openings, through which a fine spray of steam is played on the paper stuff. It is also possible to prevent the formation of froth in the course of the papermaking process by the admixture of a certain amount of oil, either of mineral or organic origin, with the paper stuff in the vats. However, it is necessary to exercise a great amount of care in carrying out this operation, for when too large a proportion of oil is used, spots are apt to be formed on the paper, and when these are once formed, they cannot be removed any more. About one liter of oil should be used for every 100 kilograms of paper stuff. Petroleum can also be used for this purpose, and in this case the proportions must be reduced to 100 cubic centimeters per 100 kilograms of the paper stock. If the back-waters from the papermaking machine are led into a funnel-shaped paper-stuff catcher, then in cases where the content of size in the paper stuff is very high, oil or petroleum can also be added at this point in order to combat the tendency of the material to foam.

* Translated from *Wochenblatt fuer Papierfabrikation*, 1922, pages 1321-22, by Ismar Ginsberg, B. S. Chem. Eng.

E. W. Butt Resigns From Seaman Paper Co.

BUFFALO, N. Y., September 11, 1922.—E. W. Butt, manager of the Buffalo territory of the Seaman Paper Company, has resigned his position.

The West Virginia Pulp and Paper Company, 200 Fifth avenue, New York, has increased its warehouse facilities by purchasing the six-story building located at 604-10 West 37th street from John S. Sills & Sons.

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ORDERS ARE MORE PLENTIFUL IN THE PHILADELPHIA MARKET

Improved Market Is Due in Part, However, to the Liberation of Orders Which Have Long Been Held Up Because of the Uncertainties in the Coal and Rail Situation—Orders for Paper Stock Also Continue to Show Considerable Improvement—Pennsylvania Paper Products Co. to Occupy Building at Green Lane and Swickley Street as New Plant—Chas. Beck Machine Co. Busy.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, September 12, 1922.—Though there has been no marked increase in the activities of the Philadelphia printing and publishing trades, and while the market is still rather flat and there continues very active price cutting to get business, there came from them during the last few days before Labor Day, and particularly since that holiday, a very marked increase in orders. The distributors explain this improved market as due in part to the liberation of orders which have long been held up because of the uncertainties in the coal and rail situation, but even more so to the feeling of confidence among the publishers that fall business will be good, and their desire to protect themselves as far as possible against advance in prices and actual shortages. Out-of-town demand for fine papers continues to be better than that which comes from the strictly Philadelphia market. Book papers, plain and coated, and cover papers lead in sales. In the wrapping paper division, both No. 1 and No. 2 kraft are in better inquiry and all the cheaper grades are selling satisfactorily. A big business is being done in the whole line of building papers, roofings, sheathings and deadening felts, A continuation of brisk trading in these lines is looked for until the season brings building operation to a close.

The paper stock packers had a notably better market after Labor Day than before, although the former period was entirely satisfactory. While on nearly all grades outside prices prevail, increases in a number are imminent. Hard whites, which, because of sluggish mill demand and low prices have been put in storage, are now in some inquiry and are beginning to move millward.

Paper Men Return from Abroad

President Allen E. Whiting, of the Whiting Patterson Company, returned on Saturday last from a visit of several months abroad, touring England and France, through which he has journeyed on previous occasions, but more thoroughly on this occasion than ever before, and also taking in Switzerland. He made a division of his time between business activities and pleasure pursuits. He spent many days visiting the paper mills in England and France, featuring specialty productions like imitations of parchment, leather, mother-of-pearl and other papers with fancy surfaces, artistically colored, and used in the highest class of fancy box wrappings, the lining of envelopes and many other special purposes. Mr. Whiting found the English mills not very active, conditions there being about the same as in this country. The French mills, however, were all run to near capacity and most of them had advance orders assuring continuous activities for some time. While a large bouquet greeted the president when he reached his desk, the well wishes of his business family, in both Philadelphia and New York, were more cordially expressed at a testimonial dinner given in his honor at the Union League Club House on Thursday night.

After a two months' trip abroad, John K. Mohr, who recently opened a paper brokerage business with offices in the Liberty Building, has returned to the city, having made connections with English mills for the importation of a line of coarse papers. Mr. Mohr sailed last June, and after spending the intervening time in visiting the paper mills of England and France and in pleasure trips on the Continent arrived in port recently on the *Aquitania*. He formerly was vice-president and general manager of the Reading Paper Mills Company, where he was connected for over 25 years, retiring last year from active service owing to illness. Last February he established his own business.

Paper Box Men Provide for Associate Members

Philadelphia Paper Box Manufacturers' Association held a special meeting in the Chamber of Commerce on Thursday night for the purpose of establishing an associate membership for supply men. Members of the Advisory Board, of which Walter P. Miller is chairman, consulted with twenty members of the anticipated auxiliary to the association. The supply men present at the meeting consisted of representatives of machinery, glue, paper box printing and board business. Among the paper houses represented was the Charles Beck Company, A. S. Datz & Son, Matthias & Freeman, A. Hartung Paper Service Company, Philadelphia Paper Manufacturing Company, Philip Rudolph & Son, Louis DeJonge, D. L. Ward Company, Garrett-Buchanan Company and the United Paperboard Company.

Charles Beck Machine Co. Busy

The Charles Beck Machine Company, 6th and Chestnut streets, has shown an increase of over 25 per cent in its sales of paper and box makers' machinery over the same season of last year. Recently a sheet cutter was installed in the plant of Renshaw, Jones & Sutton Company, of Los Angeles, Cal.; in the Missouri Paper Products Company, St. Joseph, Mo.; in the plant of Keussel & Esser Company, of Hoboken, N.J., converters of drawing papers, and a rotary board printing press in the Paperboard Corporation, of Tonawanda, N. Y. The latter concern was recently reorganized, having taken over the former Tonawanda Board Company. Maurice Simon is president of the newly organized concern.

Pennsylvania Paper Products Co. to Open Plant

A manufacturing plant has been taken by the Pennsylvania Paper Products Company in the three-story building at Green Lane and Smickley street for the purpose of manufacturing paper cans with tin tops and bottoms adapted for fluids and grease materials and allied lines. The firm is a Pittsburgh corporation, of which J. Rodger Flannery is president, Axel Malm, vice-president and general manager and John M. Roney, secretary and treasurer. As soon as the installation of machinery is complete, the plant will be put into operation. The Pittsburgh headquarters are in the Vanadium Building.

General News of the Trade

Two days of golf, with all paper trade players, is the alluring program sent out during the week by the Philadelphia Paper Trade Golf Association for the annual tournament to be held on the green of the Merion Cricket Club, Ardmore, Pa., just outside of Philadelphia, on Tuesday and Wednesday, September 19 and 20.

Robert J. Datz made his appearance during the week in the family of John A. Datz, head of A. S. Datz & Son, and both the young man and his mother are doing very well.

The Enterprise Paper Company, 3rd and Callowhill streets, has taken the agency for Eastern Pennsylvania for the well-known O W D products.

E. N. Renner, Philadelphia representative of Charles W. Williams & Co., New York, with offices in the Bourse, has returned to his desk from a vacation at Wildwood.

Roger Fuller, of the Frank Gilbert Paper Company, and Vincent Williams of the Becket Paper Company, were Philadelphia visitors during the week.

The D. L. Ward Company has resumed bi-monthly publication of the *Wardco Bulletin*. It was the first house to go on a Saturday

(*Continued on page* 30)

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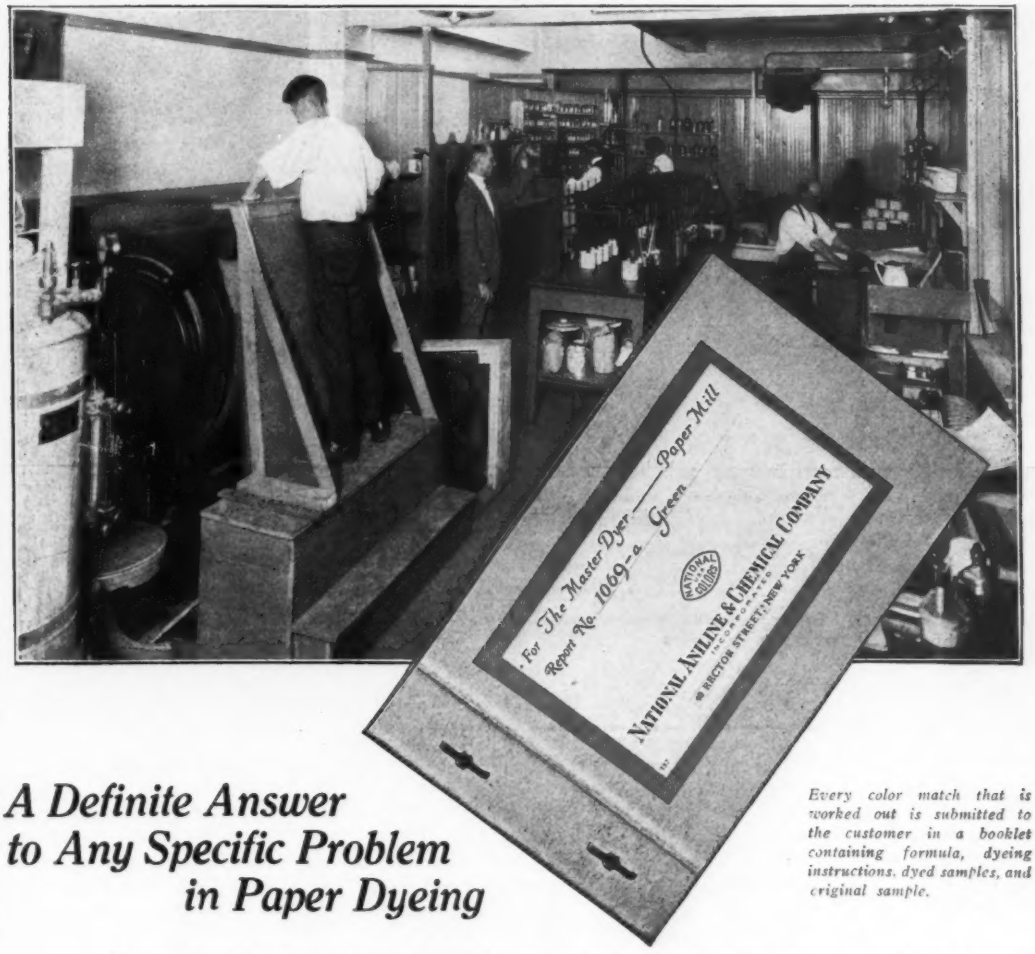
NATIONAL U.S.A. DYES



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Boston Hartford Montreal Providence San Francisco

PAPER BUSINESS IMPROVING IN THE MARKET AT TORONTO

Better Demand Is Experienced for Most Lines—Reductions Are Announced on Cover Paper and Tag Manila—Board Prices, However, Have Been Advanced and Another Increase Is Expected Within the Next Few Days—Big Concerns Are Preparing to Cut More Pulpwood This Season Than in Several Seasons Past—Mattagami Co. to Utilize Waste Wood for Fuel.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., September 11, 1922.—The paper market picked up considerably during the past week; whether the increase in trade will continue remains to be seen. The Canadian National Exhibition is no doubt responsible for considerable of the augmented activity owing to the great amount of printed matter that has been and is being put out by merchants and manufacturers. During the last few days there was a reduction of about ten per cent in all lines of cover papers, while tag manila is now selling at $5.10 to jobbers.

The wholesalers have been busy introducing the long price list. It is too early as yet to comment on the result but printers have been clamoring for the system for some time and, it is thought, several misunderstandings and practices, which crept into the paper business, will be eliminated by its inauguration. Lists are now issued by the jobber who quotes twenty-five per cent above the wholesale price on orders to all customers except to the printing trade, or where the purchaser uses the material on his own equipment or his own premises. The printers get twenty per cent off list prices and, on all known sales direct to outsiders by jobbers, the printers are given a credit for this amount.

On bonds, and flat papers, where a certain fixed figure used to prevail for ream, case or ton lots, the following discounts now hold—reams, less twenty per cent off list; cast lots, twenty and five, and ton lots less twenty and fifteen.

The paper bag business is very good and the following discounts prevail—light manilas, 60, 7½, 8½ and 5; heavy manilas, 60; light kraft, 60 and 7½; heavy kraft, 50 and 10; white bond, 17½ and 10. There are no changes in wrapping paper prices. Toilet and tissues are in fair demand and manufacturing stationers and envelope makers report an improvement in trade, while coated paper plants acknowledge that things are getting much better with them after a rather quiet summer.

Will Utilize Waste for Fuel

An application was made in the courts last week on behalf of G. T. Clarkson, receiver, for the Mattagami Pulp and Paper Company, Toronto, whose plant is at Smooth Rock Falls, Ont., for authority to install new grates in the mills. In view of the coal shortage it was said that it was necessary to use some other fuel and it was found that a new style of grate would enable the mills to burn the bark from the pulp wood that had hitherto been waste. It was stated that the grates would pay for themselves and that a big saving could be effected by installing a newly invented furnace that would utilize surplus waste power for heating purposes. The cost of the furnace would be about $15,000. The debenture holders consented to the application and Justice Mowat, in giving authority for the new installations to be made, said that he thought that Mr. Clarkson, the receiver, was not a man who would fall for the idea of faddist.

Board Prices Advancing

Board mills are exceptionally busy at the present time and owing to the shortage in coal and the ascending price of raw materials, prices are going up. A few days ago there was an advance of ten per cent which held good only a short time and now all quotations have been withdrawn. It is expected there will be another raise of, at least, ten per cent during the coming week. Plants are working to capacity and paper box factories have all the business they can attend to. Some have enough orders to last for a couple of months.

Pulpwood Cut Will Be Enlarged

There is every prospect that pulpwood will be cut in larger quantities by the big companies during the coming season than for some time past. Many concerns have already entered into big contracts as their stocks of priced pulpwood have been pretty well consumed. While prices are firmer there has not been any decided advance but one is looked for, if the demand for news print and pulp, which is improving all the while, is maintained. Most concerns will be governed by developments during the next sixty days. Shipments on contracts with paper mills across the border which have been made for the coming year, will commence early next month.

Notes and Jottings of the Industry

C. Nelson Gain, sales manager of the Don Valley Paper Company, Toronto, spent the past week in Montreal calling upon the trade. J. F. McKenzie, superintendent of the plant, is spending his holidays in St. Catherines.

C. A. House, of London, Eng., publisher of the *Poultry World*, who has been on a trip to Australia, New Zealand and the United States, was in Toronto during the past week and called upon a number of members of the paper trade.

A. M. Barkwell, of the Barkwell Paper Company, Winnipeg, was among the visitors to Toronto paper houses during the past week.

The Pacific-Burt Company, Limited, Toronto, has declared a dividend of one and three-quarter per cent on preferred stock for the last quarter.

Fred W. Halls, of the Fred W. Halls Paper Company, Toronto, who with his family, has been spending a holiday at his summer home on Sturgeon Lake, has returned.

MORE ORDERS IN PHILADELPHIA

(*Continued from page 28*)

opening basis immediately after Labor Day, the store remaining open until one o'clock, whereas during July and August it closed at noon. The Saturday morning sales meetings also have been resumed. John Conradi returned during the week from a vacation at Cape May with his family.

F. A. O'Neill has purchased a home, built in Spanish style, at 133 Pelham road, Germantown, containing 14 rooms, on a lot 70 by 210 feet, for $40,000. He will occupy the property as a residence.

Assistant Secretary-Manager Banister, in charge of the newly organized Waste Paper Division of the Typothetæ of Philadelphia, is sending out checks for the August collection. Their aggregate shows an increase in dollars and cents of almost 25 per cent over July, and with prices considerably advanced, a fact attributed by the division to its activities rather than to the rise in the value of paper stock generally.

The Miquon Mills, of the W. C. Hamilton Sons Company, are now running to almost capacity and business is better than it had been for over a year and a half. It is planned soon to put operation at capacity. A new booklet of samples of ledgers, writing and book papers is now ready for distribution to the jobbing trade, and they show an increase of one-half cent per pound on the full line, which the firm claims was necessitated by the high cost of fuel.

John Stuckey is now covering the box trade, as well as the sales of flat papers, for the Welsh Paper Company, 701 Chestnut street, taking care of a field formerly covered by Adolph Wilkins, who recently resigned from the firm to enter into the partnership with Thomas F. Pinder, Camden, N. J., who took over the coating plant of the Locke Company. He will be assisted by Joseph Hylton.

Procter & Schwartz, Inc., 7th street and Tabor road, manufacturers of pulp machinery, have taken over the business interests of the Smith & Furbush Machine Company, manufacturer of textile machinery, Hancock and Somerset streets.

XUM

Let it Save Water for You

The BIRD SELF-CLEANING SHOWER PIPE is so designed that it can be instantly cleaned of all materials which might stop up the holes. This permits the use of white water.

By using the BIRD SELF-CLEANING SHOWER PIPE with white water you can:

1. ***Save stock.***
2. ***Save water.***
3. ***Facilitate waste water purification.***

The BIRD SELF-CLEANING SHOWER PIPE operates like ordinary shower pipes with but one exception—move the handle and the shower pipe cleans itself.

Let us send you one on trial.

BIRD MACHINE COMPANY

SOUTH WALPOLE MASSACHUSETTS

Western Representative,
T. H. Savery, Jr., 1718 Republic Bldg.,
Chicago, Ill.

Canadian Builders of Bird Machinery,
Canadian Ingersoll-Rand Co., Ltd.,
260 St. James Street,
Montreal, Canada.

BIRD *self cleaning* SHOWER PIPE

86-287

QUEBEC GOVERNMENT GRANTS REDUCTION IN TIMBER DUES

New Order in Council on This Subject Is Issued Following Representation of a Delegation of Pulp and Paper and Lumber Men—Annual Report of Spanish River Pulp and Paper Mills, Ltd., Just Issued Is Considered Very Satisfactory—Price of Waste Paper in Past Six Months Advances from 10 to 20 Per Cent—Prizes Awarded in Forestry Essay Competition.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., September 11, 1922.—Following the representation of a delegation of pulp and paper and lumber men, the Quebec Government has issued an Order-in-Council, dated August 30, making reductions in timber dues. The Order-in-Council reads as follows:

"Whereas, owing to the financial crisis now prevailing and especially in the timber industry, it is expedient to modify temporarily the provisions of the Order-in-Council of October 6, 1920, respecting timber cut under the conditions mentioned below, so as to encourage licensees to provide employment for lumbermen during the coming winter. That it is expedient, for the same reasons, to cause the exploitation of burnt timber or timber damaged by insects, and that a reduction of timber dues should be granted.

"It is ordered that the Order-in-Council of October 6, 1920, be temporarily modified in favor of the licensees who shall cut, from this date to May 1, 1923, at least 25 per cent of the total amount of their respective cuts of timber for the season of 1920-1921, or of their last year's lumbering operations previous to that season, if they have not operated during 1920-1921, and that the dues on the timber so cut be calculated according to the provisions of the Order-in-Council, No. 765, of June 13, 1918.

"That there shall be charged on the burnt timber cut between this date and May 1, 1923, a rate of $1.75 per thousand feet, board measure, for white pine; of $1.50 per thousand feet, board measure, for red pine, elm, ash, basswood, maple, birch, and tamarack, and of $1.25 per thousand feet, board measure, for spruce, balsam, gray pine, hemlock, white birch, aspen, cedar, etc."

Spanish River's Annual Report

The annual report of the Spanish River Pulp and Paper Mills, Limited, just issued, is considered very satisfactory. It covers the twelve monthly period ended June 30, 1922, over one-half of which was marked by acute business depression in the pulp and paper industry, and shows a surplus after meeting all charges and the payment of the regular dividends, together with constructive changes in its balance sheet.

The report shows earnings equivalent to 8.07 per cent on the common after figuring as a prior charge the appropriation of $317,766 for the bond sinking fund reserve. It is contended that this charge might be properly made upon the consolidated surplus account, in which event the earnings would be equivalent to 11.6 per cent on common.

Besides the usual preferred and common dividends, there is a bondholders' dividend of $137,005 taken into account, making the total appropriations for the year $1,687,821, as against net income of $1,784,917.

Operating earnings for the year fell about $1,475,000, compared with the preceding year, which, it will be recalled, represented a period of general higher prices. Interest charges increased slightly, but the appropriation for taxes and contingencies were down from $500,000 to $150,000. Net profits dropped from $2,963,150 to $1,784,917. The surplus carried forward amounted to $97,096, compared with $1,288,998 in the preceding year.

The profit and loss accounts for the past three years compare as follows:

	1921-1922	1920-1921
Net earnings	$3,361,537	$4,836,001
Depreciating reserve	475,975	628,480
	$2,885,562	$4,207,521
Interest	950,645	744,371
Net surplus	$1,934,917	$3,463,150
Contingencies and government taxes	150,000	500,000
Balance	$1,784,917	$2,963,150
Bondholders' dividend	137,005	137,005
Balance	$1,647,912	$2,826,145
Preferred dividend	603,365	603,365
Net profit	$1,044,547	$2,222,780
Common dividend	629,685	629,685
Balance	$ 414,862	$1,593,095
Bond sinking fund reserve	317,766	304,097
Surplus	$ 97,096	$1,288,998
Previous balance	2,349,796	1,060,798
Profit and loss balance	$2,446,892	$2,349,796

The balance sheet shows that the company continues to operate under the auspices of a favorable net working capital position. The total is not quite as large as a year ago, but remains at the substantial amount of $6,542,703, compared with $7,316,535 in the preceding annual report.

The principal change among current liabilities is the reduction of bank loans from $3,000,000 to $1,800,000, and accounts and bills payable from $3,076,594 to $1,721,761, the total being reduced from $6,734,685 to $4,172,071.

In his remarks to shareholders President Mead says: "The New Hudro Power development at Smoky Falls, on the Sturgeon River, has been completed and the first two units, comprising approximately 5,000 electrical horsepower, were put into operation in November, 1921. The other two units of like capacity are available for immediate use as may be required. The development provides ample power for the Sturgeon plant and the investment has proved to be a very valuable asset to the company.

"In view of the general trade depression and declining prices for the company's product, it should be gratifying to the shareholders to know that the net earnings have been sufficient to meet all fixed charges and that, after payment of preferred and common dividends, a surplus remains to be added to the reserve."

New Mill to Start in January

Denaston Breakey, one of the promoters of a new pulp and paper mill at Three Rivers, states that the mill is now under construction and will probably start operations in January. He states that almost the entire supply of pulpwood will come from the company's freehold land, known as the Breakey Limits. The company now has a contract to supply some 50,000 cords a year for the next 20 years, which will produce some 45,000 tons of paper. The company expects to employ from 1,500 to 2,000 men.

Waste Paper Price Advances

An indication of the trend in the industry is seen in the advance in the price of waste paper. In the past six months the market for

(*Continued on page* 34)

XUM

FOR QUALITY PAPERS USE

A-1 BLEACHED SULPHITE PULP

MANUFACTURED BY

Kellner-Partington Paper Pulp Co., Ltd.

Borregaard **Norway**

SOLE AGENTS FOR U. S.

J. Andersen & Co.

21 East 40th Street **New York, N. Y.**

WAYAGAMACK

KRAFT PULP

Uniform in Quality
Essential for Strength Requirement

The Pulp and Paper Trading Company

21 East 40th St., New York, N. Y.

Sole Agents for United States for

CANADIAN KRAFT, Ltd. **Three Rivers, Canada**

Obituary

James A. Muir

MORRISTOWN, N. J., September 12, 1922.—James A. Muir, one of Morris County's well-known citizens and lifelong board makers, died at his home at 51 Elm Street, Morristown, Friday, September 1. He was born at Chatham, June 8, 1846, of a family of paper makers, and followed that business from boyhood. In 1875 he established his mill near Whippany, manufacturing a grade of board specialties

JAMES A. MUIR

that has become nationally known for its quality, and achieving a record of never closing down for lack of orders for forty-seven years.

Mr. Muir was active in business affairs until the last few months before his death. In 1877 he married Miss Carrie Van Arsdale, of Newark, who died in 1915. He is survived by four sons, Frank W. Muir, Louis Muir, William E. Muir, who established the Muir Board Company, Inc., of Lyndell, Pa., and James A. Muir, Jr., present manager of the mill at Whippany; two granddaughters, a brother and four sisters. Funeral services were held at his late home on Monday, September 4, and interment was made in Evergreen Cemetery.

REDUCTION IN TIMBER DUES

(*Continued from page 32*)

waste material has advanced in price from 10 p. c. to 20 p. c. A year ago this market was in many respects below normal, this being simultaneous with the depressed conditions of industry, and the present advance keeps pace with improved commercial conditions. It is pointed out that the price of waste material such as waste paper and rags of various descriptions does not depend upon supply to the same degree as material manufactured for consumption. Price depends upon demand, the material being waste, and the advance of 10 p. c. to 20 p. c. in price is a certain indication of industrial improvement.

Forestry Prizes Awarded

By the unanimous decision of the judges, Messrs. Gilbert, Howe, Piche and Wilson, the first prize of $2,000 in the contest arranged by Frank J. D. Barnjum, of Montreal, for a practical suggestion for the suppression of the spruce bud worm, bark beetle and borer, was awarded to O. Schierbeck, forest engineer for Price Bros. & Co., Limited, Quebec, whose paper on the subject was the best effort of the 230 presented. The balance of the prize, namely, $3,000, was divided equally, or $1,000 each to Doctors Swaine, Craighead and Tothill, of the Forest Insect Branch of the Entomological Department, as a reward for the untiring efforts of a small body of loyal, conscientious, overworked and underpaid Government officials who are giving the best years of their life for the suppression of the forest insect peril in Canada, and from the fact that much of the information contained in papers presented was based on the results of their good work, and as no one paper qualified fully for the prize, Mr. Barnjum, with the hearty approval of the judges, felt this would be a generous disposition of the prize money. Mr. Barnjum states that much valuable information on this important subject has been collected, which will be given to the world free, with full credit to the authors who deserve and will be accorded the earnest appreciation of the people of the whole continent which is so seriously menaced by these insect pests.

News of the Boston Trade

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., September 11, 1922.—Conditions in both the fine and the coarse paper and box board divisions of the paper trade in the Hub have been unsteady for the past two or three months due to the unstable prices, sultry weather during the summer months and breaking up of sales forces during vacation periods.

However, with practically all of the sales and office force members back now, the paper men look for a decided improvement in both number of orders and in size of individual orders. In spite of the many disturbing forces, there has been a continuous although slight upward trend in conditions.

The gradual withdrawal of prices by the manufacturers of fine papers, as well as the manufacturers of kraft, has been followed with a refusal on the part of several of the mills to accept orders on future delivery. Boston merchants all report that prices now being quoted are those determined on delivery of the separate orders.

The Great Northern Paper Company of Maine have been advertising for several weeks in this city for laborers to work on the new piece of state road which it is constructing in Maine.

W. H. Claflin & Co., Inc., of Summer street, are offering Elite white wove XX envelopes, high cut, for $1.25 per thousand, $1.18 in ten thousand lots and $1.09 in case lots of fifty thousand. The 6¼ envelopes are offered at 5 cents per thousand less. The company also is offering Triex white wove XXX envelopes, high cut, at the following prices: $1.40 per thousand, $1.30 per ten thousand lots, and $1.20 in case lots of fifty thousand, with 6¼ at 5 cents less per thousand. Triton Bond is one of the papers which the Claflin Company is specializing on at present. This paper, manufactured in white and six different colors, makes an attractive bond paper at a reasonable price. The colors are buff, blue, golden rod, green, pink and canary, and three whites are offered.

Diffuser Explodes at Advance Pulp Plant

[FROM OUR REGULAR CORRESPONDENT]

HOWLAND, Me., September 11, 1922.—The explosion of a diffuser occasioned a property loss of several thousand dollars at the sulphate mill of the Advance Bag and Paper Company at Howland at 10 o'clock Thursday night. There is no knowledge of the exact cause of the accident, which is of rather an uncommon type and might have been caused by over-pressure or a number of other causes yet to be determined.

The explosion was a serious one and wrecked a portion of the building, but fortunately there was no loss of life or even injuries, although three men were working in the room at the time. The accident will shut down the sulphate department until repairs are made but will not cause cessation of work at the mill. The exact extent of the damage cannot be ascertained until the wreckage is cleared away.

XUM

Progress and Paper Making

No. 6

Messages Across Space and Time

The savage who beats a war drum sends a message across space. The cave man who painted his wall has sent us a message across time. But it requires paper and printing to send many messages across both *space* and *time*.

Pick up a book and read a play of Shakespeare's. You have discounted three centuries of time and three thousand miles of space. And a million other men can do the same thing at the same moment. Paper made this possible.

The last check you cashed was part of an intricate system of conducting business every step of which was facilitated by the use of paper.

The inscription on the new Post Office Building in Washington applies with singular aptitude to paper:

> "Carrier of news and knowledge, Instrument of trade and industry, Promoter of mutual acquaintance, of peace and good will among men and nations. Messenger of sympathy and love, Servant of parted friends, Consoler of the lonely, Bond of the scattered family, Enlarger of the common life."

HAMMERMILL PAPER CO., *Erie, Pa.*

NEW YORK OFFICE: 291 BROADWAY

New York Trade Jottings

L. M. Alexander, president of the Nekoosa-Edwards Paper Company, of Port Edwards, Wis., was among the New York trade visitors Friday and Saturday of last week.

* * *

The Heller & Merz Company announces that its representative, John H. Loomis, has been transferred to its New York office. Arthur C. Loomis, his brother, will take his place.

* * *

John F. Carroll, of the Whalen Pulp and Paper Mills, Limited, Port Alice, B. C., was in New York last week. Mr. Carroll, who was on a business trip for his company, left for Canada last Monday.

* * *

"After a period of adversity lasting more than a year and a half," says a recent article in the New York *Journal of Commerce*, "International Paper Company appears to have most of its troubles behind it with better sailing ahead."

* * *

The Alling and Cory Company, of 313-321 West 37th street, New York, has just issued a descriptive sample booklet describing its "Uncle Sam Bond." The company recently moved from its old headquarters at 461 Eighth avenue.

* * *

The Royal Card and Paper Company, of 132-36 West 14th street, New York, has recently issued a price list on "Clarion" book and writing papers. Accompanying the list are attractive sample sheets demonstrating the effects which may be obtained in printing on the various grades.

* * *

The Interstate Commerce Commission has announced that a hearing will be held on September 18 in New York before Examiner Beach of the commission in case No. 13,867 of the International Paper Company against the director general. A hearing will also be held on the same date in case No. 13,877 of the Tidewater Paper Mills against the Bush Terminal, et al.

* * *

Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, 18 East 41st street, New York, recently returned from his European tour, was impressed with the engineering basis upon which the greater part of Scandinavian and Finnish paper and pulp manufacture is carried. The bulk of the business, he observed, was in the hands of technical men. Dr. Baker was also struck by the extent to which the men in charge of European plants have traveled in the United States. Not only have many of them received part of their education in this country, but a surprising number speak English fluently. He advises young paper men in the United States to spend a year or more in Scandinavia for the broadening effect it will have upon them.

* * *

After 28 years' affiliation with the Heller & Merz Company William J. Robertson retired on August 31. His many business friends and acquaintances will be interested to know that he expects to enjoy, in the near future, many long anticipated tours of rest and pleasure, both in this country and abroad. His associates in the New York office of the company expressed their sentiments of bon voyage to him in person on August 31 when they presented him with a traveling case with all appointments for convenience and comfort. Eugene Merz made the presentation and as a further testimonial of his esteem, Mr. Merz personally presented Mr. Robertson with a beautiful watch. The sincere wishes of his friends as well as these concrete remembrances will accompany him on trips full of interest and keen enjoyment.

Recent Incorporations

JONES & LEIGH MANUFACTURING COMPANY, Manhattan, New York, make paper, capital $100,000; G. L. Leigh, W. A. Simon, H. A. Jones. Attorney, L. I. Geber, 291 Broadway.

TRINITY CORPORATION, Dover, Delaware, capital $6,000,000. Boyce & Magee, Dover.

CHINA FIBER CONTAINER COMPANY, Wilmington, Delaware, manufacture paper and pulp boards, capital $250,000. Corporation Trust Company of America.

DIXIE WAX PAPER COMPANY, Dallas, Texas. Capital, $20,000. Incorporators: R. G. Smythe, G. C. Embry and J. M. Irwin.

UNITED STATES PAPER MANUFACTURING COMPANY, Baltimore, Maryland. Capital, $3,000,000.

SHELBY PAPER BOX COMPANY, Memphis, Tennessee. Capital, $200,000.

JONES BROS. COMPANY, Manhattan, New York, make paper boxes. Capital $10,000. Incorporators, M. Jones, L. Reiss, I. Berkowitz. Attorneys, Basch & Kulkin, 1265 Broadway.

ALLIED PAPER PRODUCTS, Philadelphia, Pennsylvania, manufacture. Capital $50,000. Corporation Guarantee and Trust Company.

News of the Chicago Trade

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, September 12, 1922.—Howard S. Greene, who resigned as manager of the advertising and sales promotion departments of the Diem and Wing Paper Company, has been appointed publicity director of the Cincinnati Chamber of Commerce.

A new corporation, known as the "Consumers' Paper Stock Company," has been incorporated with a capital of $10,000. The new company will be located at 729 South Clinton street, Chicago, and deal in waste paper materials and will manufacture products therefrom. The incorporators are J. H. Optner, L. L. Kahn, S. B. Optner, F. A. Fischel; correspondent, Fischel & Kahn, 111 West Monroe street, Chicago.

A. E. Fuhlage, of the Pekin Paper Company, St. Louis, called on all the paper trade in Chicago during the past week.

Chicago Paper Company, 801 South Wells street, and The Paper Mills Company, 517-525 South Wells street, are advertising in all the Chicago papers the S. D. Warren Standard Printing Papers. The S. D. Warren Company is holding a campaign for better paper and better printing. "Make It Easy to Plan Printing" is the title of a series of books on better direct advertising which printers and advertisers can secure on application to distributors of Warren's Standard Printing Papers.

A fire, apparently starting in the Peter Heer paper box factory, 62 West Kinzie street, Chicago, caused damages that were estimated at $150,000 by Shirley T. High, fire attorney.

Bids and Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 13, 1922.—The purchasing officer of the Government Printing Office will open bids on September 20 for 23,750 lbs. (475 reams) 29 x 41—50 No. 1 White Machine Finish Printing Paper.

Bids will be opened at the Government Printing Office on September 20 for 172,000 lbs. (2,000 reams) of 38 x 48—86 White S. & S. C. Printing Paper.

George LaMont & Son have been awarded the contract by the purchasing officer of the Government Printing Office for furnishing 1,095 pounds of 21 x 3243 No. 24 green safety writing paper at $.238 per pound, bids for which were opened on August 21.

XUM

The Beloit Cutter

A Machine evolved for the heavily exacting needs of the Board and Container Trade.

A Cutter with years of experience packed into it.

BELOIT IRON WORKS
BELOIT, WISCONSIN

 Sept 14, 1922

TENTATIVE REPORT ON PAPER STANDARDIZATION*

NOTE. In connection with the appended report the Bureau of Standards would be glad to receive comments.—EDITOR.

The following is a tentative report, submitted by the Technical Committee, appointed by the Bureau of Standards, in connection with the Standardization of Paper. R. S. Hatch, chairman; F. C. Clark, F. A. Curtis.

I. Introduction

This committee was asked to consider and make recommendations to the Bureau of Standards in regard to the following subjects: (1) Specifications of qualtiy, (2) the testing of paper, (3) the sampling of paper for test, and (4) tolerances. The present report is of a preliminary nature, taking up those phases of these subjects on which agreement may be obtained at this time. Due to the lack of attention to these subjects by the paper industry, it is believed that these suggestions be considered tentative until criticisms have been received from a larger group of paper manufacturers.

II. Specifications of Quality

It does not seem feasible at the present stage of the paper industry to make any definite recommendations as to specifications of quality for paper for commercial use at this time. Neither are test methods sufficiently standardized nor are a sufficient number of mills under technical control to warrant this step at this time. In addition to this, it is the belief of the committee that there are not enough data available to indicate generally the test necessary to determine the quality for a particular use of the paper. In view of these facts, the committee makes no suggestions as to definite specifications of quality at this time, but does believe that this subject should be taken up and that specifications for particulars papers for particular uses be developed. The following are examples of papers of this character: Blue print paper, filter paper, paper for bags for carrying materials such as lime, cement, sugar, etc., paper for wrapping foodstuffs, insulating papers, etc.

III. The Testing of Paper

1. GENERAL.—The technique of the testing of paper in this country has not as yet been thoroughly standardized and is not recognized as of much importance as in the case of other materials. Various methods have been proposed for determining the several qualities of paper, but the industry has not any official methods of testing paper. This has been recognized by the Technical Assocication of the Pulp and Paper Industry and steps are now being taken to prepare standard methods of testing.

The experience, however, of the members of this committee with the various methods of testing paper makes it possible for committee to offer tentative suggestions which may later be studied by the proper committee of that association and a method finally developed and approved by that association.

The descriptions and methods given are for use in paper testing laboratories where accurate data are desired and, therefore, these methods may be somewhat modified for mill control work, where quick relative results are of greater value than excessive accuracy.

The test sample is described and defined under the portion of the report entitled "The Sampling of Paper for Test."

"I. Paper Testing.—(Extract from Report of Paper Testing Committee of the T. A. P. P. I.) (PAPER TRADE J., July 6, 1922, p. 48.)

"1. PURPOSE.—The testing of paper is performed for three reasons and it is possible that methods suitable for one purpose may not to be suitable for another. These purposes are (a) to study the manufacture in order to improve the quality, (b) to maintain a predetermined quality, and (c) to determine whether the quality is equal to a predetermined standard or specification. The manufacturer is interested chiefly in (a) and (b), while the user or buyer is interested in (c), when paper is bought on specification. It is obvious that various methods may be developed for use in mills that are entirely satisfactory for the development of quality and for maintaining that quality. It is thought, however, that the methods used by testing laboratories in connection with the purchase of paper on specifications, should be so defined and standardized that comparable results will be obtained by different laboratories. The methods herewith given are in some cases merely tentative suggestions which cannot be accepted as standard without further investigation. It must be understood, however, that in determining what tests to make that the purpose for which the paper is to be used is of primary importance, and that that test should be used which will indicate the quality that is specifically desired.

"2. DEVELOPMENT.—Paper testing has developed rather slowly in this country and many of the methods are of foreign extraction, as are some of the instruments and apparatus. However, a considerable amount of development has taken place and there are a greater number of methods now available. This development has not, however, been in any systematic manner and has been spread over the whole field of testing, to meet special conditions. A systematic study should be made and standard methods developed and used.

"3. GROUPS OF METHODS.—For convenience, the various methods of testing are grouped into three classes: microscopical, physical and chemical. In most cases, some of the methods from each class are necessary. It is obvious that all the tests indicated are not necessary in any one particular case, but such tests should be used that will indicate the quality of paper necessary for a particular purpose.

"4. RECORD CARDS.—Complete laboratory records should be kept of all tests (especially original data) and in such a manner as to be always available. The accompanying 5 x 8-inch record, with both sides reproduced, is offered as a suggestion, though individual requirements may necessitate certain alterations.

"5. SAMPLING.—The proper sampling of paper for test or the interpretation of the test data in connection with sampling has been neglected. It is pointed out, however, that no test data is more accurate than the sampling. This applies with especial force in connection with the testing of a shipment of paper to determine whether it conforms to a definite specification. It is obvious that cases, bundles, frames, rolls, etc., must be sampled differently, but as much care should be exercised in this connection as in the sampling of wood pulp for moisture.

"6. TOLERANCES.—The value of the test data is accurate only when a large number of tests are made or when proper tolerances are allowed. This tolerance is necessary, due to the errors which are inherent in the whole process of paper testing. The errors are introduced (a) by improper or incomplete sampling, (b) by the natural lack of uniformity in paper, due to its structure, and (c) by the error of the apparatus or method of testing which may either be inherent in the apparatus or due to improper manipulation.

"7. TEST SAMPLE.—The original sample, obtained by proper sampling should be sufficiently large and of enough sheets to enable all the proposed tests to be made without recourse to an additional sample. The various tests should be made on the several sheets of the sample in order to obtain a reasonably fair average.

2. WEIGHT.—Definitions:

(*a*) *Ream weight.*—The weight of a given sheet of paper is the weight of a ream of that paper of a given size, expressed in pounds.

(*b*) *Basis weight.*—The basis weight or "substance" of a sheet of paper is the weight of a ream of that paper of a size dependent upon the kind of paper in question. This size is different for book

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"Now I Get a Hundred Cents on Every Dollar's Worth of Pipe"

"For years, I bought pipe carelessly—the contract going to the lowest bidder. All pipe was the same to me—there was no difference. That was the case for several years—then the trouble began. Ill fitting joints began to leak. Corrosion made necessary costly replacements. Production was held up here and there. Maintenance costs were out of reason. *Something had to be done.*

"I got in touch with superintendents of other mills. One claimed to know about pipe. He said that *there was a big difference* in pipe. The pipe which he used gave him three times the life of the best steel pipe. He said it was the cheapest pipe in the end.

"So now, I use Reading Genuine Wrought Iron Pipe. I know that its initial cost is slightly more, but its cost per year far less. I have come to know its far superior threading qualities and its ability to resist corrosion which eliminates those costly replacements. Through Reading's years and years of service I have realized it's the pipe that gives a hundred cents on every dollar's worth."

READING IRON COMPANY, Reading, Penna.

World's Largest Makers of Genuine Wrought Iron Pipe.

Boston	Baltimore	Chicago
New York	Pittsburgh	Fort Worth
Philadelphia	Cincinnati	Los Angeles

READING
GUARANTEED GENUINE
WROUGHT IRON PIPE

XUM

paper, fine paper, news print, tissue paper, cover paper, board, etc. It is recommended that the basis weight or "substance" of a given sheet of paper be based on a ream 25x40 inches of 500 or 1,000 sheets for all paper.

Method: The weight of a given sample of paper is determined by means of a sheet-weighing device that indicates the equivalent weight in pound in terms of a 500-sheet ream. Graduations of ¼ pound are sufficient for most work, but it is recommended that a sufficiently large sample be used in order that a variation of ¼ pound scale reading will not be greater than ½ per cent of the total weight. Where small samples only are available, it is recommended that a chemical balance be used, the conversion factor from grams to pounds being 1.102. For accurate work the relative humidity and temperature should be recorded or considered.

In connection with the determination of weight of a sample of paper, it is necessary to determine the total area in square inches of the sample being weighed. The area should be determined within an accuracy of ½ per cent, except that the dimensions should not be determined closer than 5/100 of an inch. It is recommended that the test sample for weight shall consist of 10 sheets, each 10x10 inches in size.

The total accuracy of the weight and area determination (ream weight) should be within 1 per cent, except where only a small sample is available. In the latter cases, it should be indicated that the result is approximate. Test results should not be reported in less than ½-pound units.

Calibration: Each sheet-weighing device should be carefully calibrated at stated intervals with accurate weights, both with increasing and decreasing load. Attention must be given to the setting of the device to make sure that it is properly leveled and gives zero reading at zero load.

3. Thickness.—Definitions:

Thickness of a sample of paper is the thickness of a single sheet of the paper as indicated by a dial micrometer in thousandths of an inch.

Method: By means of a dial micrometer, not less than ten readings of the thickness of the sheets of the sample are obtained, and an average of these readings indicate the thickness of the sheet of paper. Readings should not be reported closer than one-half of a thousandth of an inch (0.0005).

It is recommended that the dial micrometer used for this purpose shall have (1) a spherical plunger foot with one-inch (± 0.1 inch) radius of curvature of not less than ½ inch in diameter, (2) that the static pressure shall be within the range of two pounds six ounces to one pound ten ounces, (3) that one division on dial is to be read as 0.001 inch and to be at least ⅛ inch wide, and (4) that the accuracy of dial readings of micrometer with leaf gages shall be within the following tolerances:

Intervals	Max. permissible error
0 to .01″	± .0001″
.01 to .04″	± .0002″
.04 to .12″	± .0004″

Calibration: It is advisable to have all thickness testers calibrated before use. This may best be done by securing a set of standard leaf gages, which range from 0.001 to 0.015 inches. This range of leaf gages covers the ordinary range needed in testing most papers, and should be used periodically to see that the instrument for measuring thickness remains accurate.

4. Bursting Strength.—Definitions:

The bursting strength is the apparent pressure necessary to burst a hole in a sheet of paper when the pressure is exerted against a definite area and the sheet is held taut by a clamp. The pressure is applied hydrostatically through a flexible diaphragm and is indicated on a suitable gage.

Method: An average of not less than 10 tests on different parts of the test sample shall be obtained by means of the Mullen tester. The tests are to be made with the improved type, with the lever clamp and the hand wheel shall be turned at a *uniform* rate about 120 r.p.m.; a lesser rate is difficult to maintain uniform and a greater rate produces too high results. Unless otherwise specified, tests are to be made between water marks. The dial is to be read as units, and the average of not less than 10 tests may be reported to one decimal place.

The gage of the Mullen tester should be calibrated with a standard dead-weight tester at least once a month and if the gage on the dead-weight tester will not reproduce itself within 1½ division it should be discarded and a new one obtained. At least once a month a new diaphragm should be used and the amount of glycerine examined to determine amount and cleanliness. In placing a new diaphragm in place care should be exercised that air bubbles are not found under the diaphragm. As soon as a test is complete the wheel should be fully reversed, even before the sample is removed. It is suggested that a supply of diaphragms be kept in distilled water, as rubber rapidly deteriorates.

5. Microscopic Fiber Analysis.—There are at present four methods used for this purpose, and this subject is now being investigated and studied by the Paper Testing Committee of the Technical Association of the Pulp and Paper Industry. It is, therefore, believed desirable to wait for the report of that committee before making any recommendations.

6. Humidity Conditions for Testing.—The extract from the report of the Paper Testing Committee of T. A. P. P. I. (given below) indicates the general effect of relative humidity upon some of the physical properties of paper. It is brought to your attention that T. A. P. P. I. has requested the Bureau of Standards to go fully into the subject and prepare a publication in regard to this. It is understood that these data will soon be available, in the form of curves, for consideration:

"III. Physical Testing. (Extract from report of the Paper Testing Committee of T. A. P. P. I., Paper Trade J., July 13, 1922, p. 47.)

"1. Effect of Relative Humidity.—A superficial examination of the published data will indicate that the physical qualities of paper are affected to a considerable degree by changes of the moisture content of the test sample. Different kinds of paper, as well as different qualities, are affected to a different degree, but certain tendencies are obvious and the importance of the consideration of the condition of the test sample at the time of test should not be underestimated. The suggestions contained herein are not conclusive nor complete, but the conclusions have been determined after a careful study of existing data.

"(*a*) *Relative Humidity.*—The moisture content of the test sample is affected by changes in humidity, either absolute or relative. Absolute humidity is defined as the number of grains of moisture per cubic foot of air at the temperature in question. Relative humidity is defined as the percentage of moisture present, at any particular temperature, to the amount of moisture present if the air were saturated at that temperature. The available data seem to indicate that in most cases the variation of quality of paper bears a relation of relative humidity, rather than to absolute humidity.

"In most testing laboratories that attempt to control their atmospheric conditions a temperature of 70°F. and a relative humidity of 65% is maintained. These conditions have been adopted because of work done in the past in Germany and because of the increased cost to maintain a lower relative humidity during the warm weather, when the moisture must be taken out of the air by some method of refrigeration. It is not uncommon, however, in steam-heated rooms, during the winter, to obtain a relative humidity as low as 15 per cent.

"(*b*) *Moisture.*—The moisture content of paper increases with increase of relative humidity and in general seems to be independent of the finish, kind of paper, or the method test. A composite average with the moisture content, when plotted, as ordinate and with relative humidity as the abscissa produces a regular curve,

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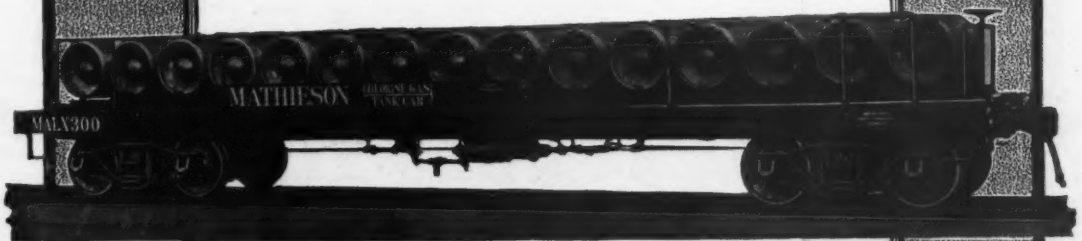

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slightly concave. At 15 per cent relative humidity the moisture content varies from 3 to 7 per cent for different kinds of paper, and at 85 per cent relative humidity the range is from 9 to 14 per cent, with 20 per cent as a possible saturation point at 100 per cent relative humidity. The accompanying curve indicates in a general way the tendencies of change of moisture content with relative humidity.

"(*c*) *Weight.*—In general, it may be said that the variation of weight due to changes of relative humidity is similar and proportional to the variation of moisture content of the paper. The variation in weight from 15 per cent relative humidity to 85 per cent relative humidity seems to be about 6 per cent.

"(*d*) *Bursting Strength.*—Data available at this time in regard to the effect of relative humidity upon the bursting strength seem to indicate that bursting strength increases with relative humidity up to about 35 per cent relative humidity and that from that point decreases equally rapidly with increasing relative humidity. This conclusion seems to be assured from the considerable amount of data available, but it is not believed than any conversion factor may yet be developed. The amount of variation is widely different for different papers and it seems to be evident that long-fibered papers are affected to a greater extent than short-fibered papers. In any case, this variation is quite evident and should be taken into consideration when careful and accurate tests are to be made.

"(*e*) *Tearing Strength.*—Very little data are available in regard to the relation between tearing strength and relative humidity, but such work as has been done indicates that this test is markedly affected by changes of relative humidity. Tearing strength increases to a considerable extent with increase of relative humidity, and the amount of this variation seems to be comparable with that in the case of the folding and tensile test.

"(*f*) *Folding Endurance.*—The effect of relative humidity upon this test seems to be somewhat erratic with different papers, but in any case the variation is very marked. In general, the folding endurance increases rapidly with increase of relative humidity, the machine direction more rapidly than the cross direction. With certain kinds of paper there seems to be a peak in the curve at 80 to 90 per cent relative humidity, with a rapid decline, while with other papers this peak does not appear. Data seem to indicate that this test is affected by relative humidity to a greater extent than any other.

"(*g*) *Breaking or Tensile Strength.*—The variation in this test seems to be very similar to that in the case of the bursting strength, but to a greater degree. Strength increases with relative humidity up to a point of about 35 per cent and then decreases at a similar rate. This variation is similar in both the machine and cross direction and in either case seems to be over twice as much as in the case of the bursting strength."

It is obvious that certain properties of paper are affected by relative humidity and it is believed necessary to control the conditions of test when accurate tests are desired. It is probable that a definite relation may be found between the moisture content of paper and its physical properties and it may be possible to determine a conversion factor to reduce the strength value, for instance, to some definite relative humidity.

In view of the work now being done at the Bureau of Standards, this committee does not recommend a particular relative humidity at which paper should be tested, but it does recommend that this subject be considered and that some rather narrow limits of relative humidity be adopted, taking into consideration the average indoor relative humidity and the cost of maintaining constant humidity conditions in the testing laboratory.

IV. Sampling of Paper For Test

1. General.—One very important aspect of the technical study of paper which has been neglected is a proper, intelligent and systematic method of procuring a portion of a lot of paper which may truly be considered to be a representative sample of that lot. Unless this is done, the value of any test is somewhat vitiated by not knowing whether the sample represents the lot of paper in question. It is believed that proper sampling is important both in the mill during manufacture, in order to maintain uniform quality, and also at the point of delivery of shipment to determine the quality of the paper received.

In view of these facts, this committee believes that certain recommendations may be made and that, after revision, they should be included in that part of the Bureau of Standards' recommendations that have to do with the testing of paper.

2. Test Sample.—The test sample shall be considered to be representative of the lot of papers in question, shall consist of a sufficient number of sheets to have a total area not less than 1,000 square inches and shall be used for all the necessary tests on the paper. If tissues or boards are in question, the size of the test sample may be adjusted.

Tests will be so made that all the sheets of the test sample will be tested and an average will indicate the average quality of the lot of paper in question.

3. Sampling of Rolls.—Not less than 10 per cent of the number of rolls delivered should be sampled by removing a suitable size sheet from the first unharmed layer under the wrapper, provided that equal portions are taken from several rolls and that sufficient paper is taken to make up the test sample of not less than 1,000 square inches. If there are more than 100 rolls in the lot of paper in question, not less than 5 per cent of the number of rolls should be sampled as above.

The sheets or portion of sheets obtained in the above manner should be cut and trimmed to small sheets not greater in size than 10 x 10 inches and shall be considered to be the test sample.

4. Sampling of Paper in Cases, Frames and Bundles.—Not less than 10 per cent of the number of units of the above should be so sampled that separate sheets are taken from different parts of the case, frame or bundle of paper in order that those sheets will represent the paper of that unit. If there are more than 100 cases, frames or bundles in the lot of paper in question, not less than 5 per cent of the number of units should be sampled as above. The sheets or portions of sheets obtained in this manner should be cut and trimmed to small sheets not greater in size than 10 x 10 inches and shall be considered to be the test sample.

5. Re-sampling.—In case of necessity for new samples, they should be taken in the same manner as indicated above, except that different rolls, cases, frames or bundles should be sampled.

In case the identity of the original units is lost and the paper is not in cases, frames, bundles or rolls, the whole lot should be carefully sampled, so that the sample will be representative of the lot.

V. Tolerances

1. General.—Due to the method of manufacture of paper, the lack of uniformity of paper and the errors introduced during the testing of paper, it is believed by this committee that a definite system of tolerances should be developed and applied to the test data when obtained. These tolerances should cover the errors of sampling, of testing and the varying quality of paper. The experimental tolerances of testing will be given in connection with the standard methods of testing.

2. Weight.—The tolerances permitted in the trade customs and practices of the various paper manufacturers' associations appear to be fair and reasonable, and it is recommended that these tolerances be applied in so far as tolerances of basic weight are concerned.

3. Thickness.—A tolerance of 10 per cent above or below the specification is recommended for the thickness of paper.

4. Bursting Strength.—A tolerance of 5 per cent below the specification is recommended for the bursting strength of paper.

5. Ash Content.—A tolerance of 2 per cent total is recommended for the ash content.

6. Fiber Content.—A tolerance of 5 per cent plus or minus is recommended for the fiber content.

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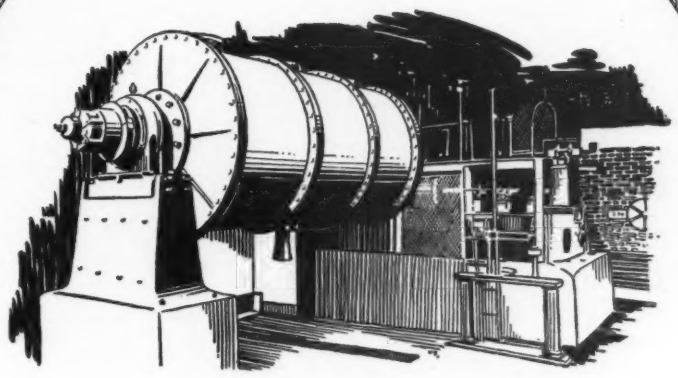

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CONTINUOUS CAUSTICIZATION FOR PULP MILLS WITH PROVISION FOR THE UNINTERRUPTED RECOVERY AND RE-USE OF THE LIME SLUDGE*

By W. D. Mount, Glamorgan Pipe and Foundry Company

While lime is being satisfactorily recovered and reused for causticizing purposes at the present time in connection with the old and widely used *batch* process there are, nevertheless, several factors that militate seriously against the attainment of the highest success. I shall endeavor to point out how well designed apparatus and continuous methods eliminate these obstacles to efficient plant operation.

Of several factors incident to the old method perhaps the most important is the variability of the free lime content in the discarded sludges. A free lime content much in excess of 5 per cent does not, as a rule, filter well, but if this limit is not exceeded, and if the recovered lime be continuously and uniformly used a granular and porous filter cake from one and one-half to two inches in thickness, which will wash and dry well, can be formed readily.

Another important factor is temperature. A cake such as that just described cannot be formed on the filter drum from cold sludges. It is essential that the muck be filtered hot, 60 to 80° C. and even higher temperatures favor the filtration, but at temperatures of 40 to 45° C. the results are not good.

A third factor of importance is the use of hot water for washing the cake on the filter drum.

Lime Content Variation

Although I cannot speak authoritatively with respect to the practice generally followed by Soda Mills it has been my observation in those plants with which I am familiar that there is a marked variation in the free lime content of the sludges. I have in mind one instance where the free lime content ran as high as 19 per cent. In another mill the average over a considerable period was 13 per cent. You will understand that a sludge of this kind implies a waste of good lime if it is sent to the dump, or poor filtration will result if recovery is undertaken.

In justice to the intermittent methods of causticization it is only fair to state here that sludges of this kind can be attributed frequently to the operator rather than to the apparatus, although it is sometimes the case that both operator and apparatus are responsible, or carelessness and ignorance combined with faulty design. I have found too often in some mills a disinclination to depart from what has become accepted practice, and while I do not mention this in a spirit of criticism I have reason to believe that a greater willingness to try out certain variations in the process would bear fruit in the shape of substantial improvement in operation.

The Element of Temperature

It has also been my observation that the majority of intermittent causticizers are deficient in agitation and also in a satisfactory means of applying heat. I know of one mill where the records showed that on one shift it was quite the regular thing not to boil the batches. The temperature averaged about 190° to 194° F. This, of course, was directly the fault of the operator and not of the apparatus.

Proper boiling for a given period and effective agitation are absolutely essential to uniform causticization regardless of whether the intermittent or continuous process is employed. In either case the design of the apparatus should be such as to make possible the attainment of these two important factors and that without difficulty. In this connection I may say that the advantage lies with the continuous process since efficient boiling cannot be obtained without, at the same time, securing proper agitation. As special provision is made for this combination in the continuous causticizer; it is a feature which eliminates at least one variable engendered by human control.

Heating Done Quickly

Another feature of the continuous causticizer which further tends to eliminate fluctuations is that the quantity of liquor under treatment at any time is, as compared with the intermittent, extremely small and, consequently, the heating is quickly done. This, as a feature of design, is of equal advantage to the agitation; as a matter of fact, the problem was to tie these two important factors together in a manner which would insure the uniform and equal effectiveness of both. It follows, therefore, that as a first step in the design of causticizing apparatus positive and uniform boiling and agitation must be provided.

The second step is the separation of the hydrate from the sludge and the third the efficient washing and drying of this sludge. By drying I mean that degree of dehydration possible on an approved filter.

The fourth and last step is the calcination of the sludge as it comes from the filters and its return as quicklime to the causticizing operation. These four steps are common to either of the two methods under discussion.

Required Apparatus

The special apparatus and plant required for the continuous process may be described as follows: Continuous causticizer, decanter, rotary filter, rotary kiln, continuous lime slaker, and certain auxiliary apparatus such as vacuum pumps, lime and liquor pumps and a sludge agitator. All of this equipment works continuously. The causticizer is heated with exhaust steam and is supplied continuously with calcium hydrate and sodium carbonate in the proper proportions by means of pumps. The uninterrupted discharge of caustic liquor and lime sludge is delivered by pumps to the decanters whence the clear hydrate is drawn from the top and the mud from the bottom. The last-named is pumped direct to the sludge agitator and from there it flows to the filter. The cake is then delivered by a belt conveyor to the rotary kiln which is fired with gas, powdered coal, or oil. The product of the rotary kiln is recovered lime ready to be sent immediately to the continuous slacker, and as a matter of fact is delivered at a uniform rate to the slacker.

* Read at the meeting of the Technical Association of the Pulp and Paper Industry at the National Exposition of Chemical Industries Grand Central Palace, New York, September 11-16, 1922.

To Investigate Dumping of Kraft Again

[FROM OUR REGULAR CORRESPONDENT]

Washington, D. C., September 13, 1922.—Announcement was made by the Customs Service of the Treasury Department some weeks ago that no dumping of kraft paper had been found in a recent investigation from the Scandinavian countries.

Another complaint, however, has just been received by the Customs Service to the effect that there is dumping of kraft paper on the United States market from Norway, and another investigation has been started by the Customs Service.

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REPORT ON PAPER TESTING BY GOVERNMENT

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 12, 1922.—E. O. Reed, chief of the Testing Section of the Government Printing Office, recently established by the Public Printer, for the testing of paper and other commodities, has just made a report of the work done from January 1 through July 1.

The Testing Section was established about January 21, although the actual testing of paper deliveries was not begun until February 1. The new receiving ticket and inspection of other materials purchased by the Government Printing Office was put into effect about April 1. Mr. Reed, in his report to the Public Printer, has the folliwng to say, in part:

Has Greatly Improved Quality

"Over 1,500 samples of paper have been tested up to July 1, including all paper deliveries, envelopes and miscellaneous paper products.

"The result of the paper testing by this section has geratly improved the quality of some of the largest items on the Government Printing Office Schedule.

"Deliveries by the ———— Company, when the Testing Section first started operating, were found in many cases not to be equal to the specifications, and in no case was the white writing, stationery bond, or commercial ledger paper, animal sized, though definitely specified. The rag content of the deliveries on white writing and stationery bond was in many cases under the specified 50 per cent, being as low as 40 to 45 per cent. The writing quality was poor and the paper broke readily when folded. The erasure quality and writing quality of the commercial ledger paper, from the same mill, was very poor for this grade of paper. The general appearance of all this paper was very specky and not equal to requirements. It was found, upon examining several different deliveries of stationery bond letterheads to the Agriculture Department, and even the standard sample of white writing for 1921-1922, that the rag content of these papers was only 30 per cent and not animal sized.

"These defects were at once reported and all deliveries by this mill are now decidedly better—the rag content complying fully with specifications, all papers being animal sized and the general appearance and speckiness greatly improved.

"The amount of paper work handled by the Testing Section has been very large and it is doubtful if any other laboratory has ever handled a like number of samples in the same time with as few analysts. The methods used by this section in paper testing are the most accurate and reliable known and require more time than methods which are used by most of the other laboratories.

"The promptness with which the office has been able to secure technical tests of paper which the office was in very urgent need of has undoubtedly been of great value in preventing delays in the work of the office.

"Binders' boards have been carefully tested, and it is believed that the quality of this material is now satisfactory and equal to standard samples, and that bidders have a better understanding as to the requirements of this office. It is hoped to carry out considerable investigational work on binders' board and secure definite specifications indicating the necessary qualities desired."

Recommendations for Paper Work

In connection with recommendations for the paper work, Mr. Reed says in his report:

"The Testing Section is fully equipped for paper work with the exception of special physical testing devices, which may be needed in the future. A room has been constructed for maintaining an average uniform humidity condition throughout the year and the necessary equipment received and is waiting erection by the Buildings Division."

In conclusion, and taking up the question of a better understanding with contractors, Mr. Reed says:

Need for Better Understanding

"The Testing Section should aid in establishing a more cordial feeling and understanding between the contractor and the Government. Any contractors supplying materials to this office should be invited personally, if possible, to bring to our attention any grievance which they may feel they have with reference to the testing of their deliveries and urged to demonstrate their views or be thoroughly convinced that they have no grounds for complaint.

"It is certain that the present methods of sampling and testing are as fair as possible to both the Government and contractor. The fairness of the specifications for paper cannot be doubted, as these specifications have been in use for years and are in general accord with trade customs."

Wants Forest Station for New England

[FROM OUR REGULAR CORRESPONDENT]

NEW YORK, Suptember 12, 1922.—The Woodlands Section of the American Paper and Pulp Association, the department devoted to the practice of forestry, has asked governmental authorities to secure the establishment of a forest experiment station in New Hampshire to study problems relating to the growing of pulpwood for the paper industry, as well as timber for building construction.

The New England station, it is believed, would be able, through investigations by forest service experts, to develop information of the greatest value to the paper companies which are endeavoring to practice forestry on their cut-over lands, as well as to protect the timber now standing from devastation. The Woodlands Section believes New Hampshire would be the best field, because its forest lands are typical of the pulpwood forests of Maine, New York, New Hampshire and Vermont, the four states which a New England laboratory would serve, and because there is already a national forest in the White Mountains.

In taking this action, the Woodlands Section, which is composed of foresters and technical logging men of the paper companies, urges that the government give the aid of its technical research men to the study of problems in which the company foresters, managing private forests on a commercial scale are interested, and to co-ordinate the investigations of these private foresters.

Rumford Bag & Paper Mills Have Outing

RUMFORD FALLS, Me., September 9, 1922.—The employees of the Continental Paper and Bag Mills held their annual outing and field day last Saturday and it was one of the most successful occasions of the kind ever held. In its account of the affair the *Rumford Falls Times* says:

"And the man who was responsible for all this: Page Major Theodore Hawley, the genial general manager. Whether it be business or a holiday such as this, the Major plans it with the same thoroughness and success that is characteristic of him and in this achievement he may well take pride."

To Intervene in Paper Mills Tariff Case

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 13, 1922.—The Interstate Commerce Commission has announced that the Kalamazoo Chamber of Commerce has been permitted to intervene in case No. 13,950 of the Michigan Paper Mills Traffic Association against the New York Central et al.

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Editorial

Vol. LXXV New York, September 14, 1922 No. 11
FIFTY-FIRST YEAR

The Chemical Exposition

Never, in the history of chemical development in the United States, has a more elaborate or up-to-the-minute display of the wonders of modern science and the magic of twentieth century chemistry been presented than is the mammoth exhibition of four hundred manufacturers, covering four floors of the Grand Central Palace and lasting from September 11 to 16. In recent years the exhibitions of the National Exposition of Chemical Industries have ceased merely to be milestones, recording the progress of the preceding twelvemonth. They have become a source of veritable wonder and fascination for the age in which we live—they have served as a medium through which the world in general and kindred manufacturers as well as consumers, in particular, may be apprised of the most recent achievements in the world of chemistry.

This week's exposition reflects at every turn the growing tendency to eliminate the human equation in modern mechanical devices and substitute a more efficient and inexhaustible element—the machine. In nearly every exhibit some feature was stressed which was designed to substitute oiled steel bearings for brute man-power. Economizers of all types were the order-of-the-day—economizers particularly, that effected their greatest saving in human energy.

No pains were spared by the exhibitors in the construction of actual working models, and visitors of the exposition were thus afforded and opportunity of witnessing some 400 different manufacturing plants—in miniature or in illustration—all under one roof. Those interested in the technical end of paper making were enabled to obtain a working knowledge of every new feature which chemists have evolved during the past year—to inspect the various model plants and miniature devices used in illustrating novel processes—all within the brief space of one afternoon.

Another single afternoon was all that was required to furnish each with a graphic conception of these late improvements, both in word and motion-picture form. The meeting of the Technical Association of the Pulp and Paper Industry, presided over by Mr. George Williamson, president of the Association, was perhaps the most thoroughgoing and best-attended ever held. A spirit of camaraderie and hearty co-operation pervaded the meeting of these men that are today molding the future of paper manufacturing—men who are seeking to improve methods of production, eliminate waste and save man-power. In the round-table discussions of various subjects, the keenest enthusiasm was exhibited over each matter as it was taken up, the long discussions, pro and con, and the multitude of questions from paper and pulp technical experts the country over giving evidence to this.

The 1922 Chemical Exposition served to mirror the constructive strides which are being made in all branches of American industry. The plans discussed were created in the mind of some individual who has probably devoted his life to an exhaustive study of his subject. The new inventions—the working models—the labor and time savers—all were worked out in the minds of men whose training and thought and study has enabled them to see into the future and anticipate the needs of industry a generation from now. Their work is creative work. Their enthusiasm is based, not upon the lure of the dollars, but upon the fact that they have really accomplished something. Their idea—their "castle-in-the-air" of a few short months or years ago—has materialized into a mechanism of cold steel. They have made a genuine contribution to industry and to progress.

An Improved Outlook

From all indications paper men are in for a satisfying period of healthy business during the last quarter of this year. With the advent of the fall months, demand is sharply on the increase in practically every branch of the paper field and prices are rising correspondingly.

The International Paper Company, representative of the trend of the American paper industry because it is the largest individual company, is now producing, on a capacity basis, 1,100 tons of news print daily and other grades, bringing the total up to 1,600 tons. Current news print consumption, by the way, is now going on at the highest annual rate ever known—more than 2,200,000 tons.

"International Paper Appears to Have Turned the Corner," says a headline in one of last week's issues of the *Journal of Commerce*. The article continues:

"International Paper entered the second half of 1922 with its labor troubles settled, in fair financial position and with increased paper prices in prospect. Two advances of $5 a ton each have already been effected and new contracts are being taken at $80 a ton. Prices for 1923 will begin to come out about November and it is practically certain that they will be at least $80 a ton, possibly higher.

"More than 50 per cent of company's news print production was contracted for to end of 1922 at $70 where margin of profit is small even on large production. International Paper did well to break even on operations during the first half year to say nothing of bond interest or preferred dividends, which combined required about $1,200,000 for six months. With news print production at capacity and prices stiffening, it is practically certain that this half year will show distinct improvement and preferred dividend may be earned."

Commenting upon the company's assets, the article continues:

"Plant and property account is carried at $38,000,000. This does not nearly represent its real value as included in this are woodlands and water power rights which could not be purchased at any price. Few perhaps appreciate that International Paper Company owns in perpetuity developed and undeveloped water power sites on a scale which compares favorably with some of our largest public utility companies.

"To insure its wood supply, it has acquired a small empire of its own in timberlands. Its mills each year consume about 700,000 cords, available from 220 square miles of timberland. Part of this supply is purchased from outside sources."

If, after a year and a half of adverse conditions, the country's largest paper company is beginning to pull out of the mire and again realize a profit, this must, of itself, bode the approach of better times for the whole industry. Surely the paper outlook has improved.

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University Co-operation

"The Paper Industry and the Business Cycle" is the subject to which Weekly Letter No. 37 of *Harvard Economic Service,* the publication of the Harvard University Committee on Economic Research, is devoted. Accompanying the pamphlet are nearly a dozen interesting charts showing monthly price variations for the representative grades of paper and board from January, 1919, until the present.

Those paper men who were fortunate enough to be able to get to the convention of the American Paper and Pulp Association last April will recall the illuminating address delivered by Mr. Warren M. Persons, Professor of Economics at Harvard. Using a series of graphs, Mr. Persons outlined his reasons for believing that there would be an increase in business activity and volume of manufacturing in the near future, accompanied by rising prices. "It is probable," he stated at the general session of the convention, "on the evidence of price records, that during the next year or two the prices on a number of important basic commodities will show an increase of 25 to 50, or even 100 per cent above the low points of 1921."

Mr. Persons' predictions have come true so far. His conclusions were based on a thorough-going and intelligent study of statistics. Jobbers, who are now experiencing considerable difficulty in securing adequate supplies to cover the requirements of consumers, will recall that it was Mr. Persons' advice, when questioned directly, that they stock up to capacity at that time—when prices were at their lowest ebb for the year.

Now, when Harvard's Committee on Economic Research publishes a "Letter" dedicated solely to the interests of the paper industry—to the dissemination of unbiased facts—paper men will receive it with more confidence. They have seen Harvard statistics and "theories" work out in actual practice once. Perhaps it will happen again.

In any event, there is nothing to be lost by a careful perusal of Weekly Letter No. 37. W. L. Crum, of the Committee on Economic Research, has spared no efforts in the gathering of information for this publication and the entire committee deserves the highest praise for the clarity of its content. The PAPER TRADE JOURNAL takes this opportunity to express its appreciation, in behalf of the paper industry, for Harvard's constructive work in this field.

Japanese Visitors at Watertown

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., September 11, 1922.—T. Okawa, son of H. Okawa, who is the second wealthiest man in the Japanese Empire, arrived in the city Friday night with Clarence E. Kinne, of the Bagley & Sewell Company and will be his guest until Tuesday. With him is K. Satow, private secretary to the senior Okawa. They are on a business trip through the United States and to Europe, inspecting paper mills and paper machine manufacturing plants with a view to possibly placing orders for machinery.

This is the first visit here of the young man, although Mr. Satow has been here several times before. He is a graduate of the University of Tokio in a mechanical engineering course, while Mr. Satow graduated from the University of California and took a post graduate degree from Columbia.

H. Okawa is in control of 45 large corporations in Japan and owns a large group of paper companies. He has 16 paper mills operating 50 paper machines, many of which were made in the Bagley & Sewell plant here. Mr. Kinne had visited the mills while in Japan a few years ago, and it is claimed that through the local concern Watertown is the best known city in the manufacturing centers of the Empire. Paper companies represented by the two visitors include the Fuji Paper Company, Kaushuiu Paper Company, Chuwuo Paper Company and the Karafuto Industrial Corporation. Practically all kinds of paper are manufactured, with news print being the least of them. They report an over-production of paper there just now, although most of the mills are operating on full time.

The Japanese visitors were met by Mr. Kinne in Vancouver, and they accompanied him across the continent. He left for the West on June 29 on a visit to mills throughout the coast section. He stopped in Portland, Ore.; Seattle, Yakima, in Eastern Washington, in the midst of an irrigated fruit country, and then went to Vancouver, where he passed two weeks visiting mills in that country.

It is not known what plans for placing orders for paper making machinery the visitors to the Bagley & Sewell plant may have made.

State May Take Pulpwood for Fuel Purposes

[FROM OUR REGULAR CORRESPONDENT.]

ALBANY, N. Y., September 11, 1922.—Drastic measures to insure fuel for homes during the coming winter which were under consideration by Governor Miller and the legislature sitting in extraordinary session in Albany may carry the new state fuel administration so far as to seize all available supplies of cut pulp wood within the state and ship it to centers of population needing fuel instead of using it for the manufacture of paper.

The big question facing the governor, the legislature and the state fuel administration will be to get fuel. All other questions will be of secondary importance. This will mean that where coal is not available, the administration will take steps to get wood, and cut wood, even though intended for pulp mills in the Glens Falls district, may be seized, simply because it is in available form for burning in an emergency.

Realization that the supplies of coal are far inadequate to meet the situation even in the fall has brought up the question of wood fuel supply, but the present supply of wood for fuel purposes in centers of population is even more inadequate to meet the situation of winter fuel than the coal.

This, of course, will mean that all wood that is cut and can be burned will be made use of for the relieving of the emergency situation. The Glens Falls district probably more than any other in the state with the exception of the territory near Watertown, will feel the industrial pinch if it becomes necessary to seize pulp wood for fuel.

This step, however, would only be taken in an extreme emergency when it would be necessary to alleviate actual suffering caused by the lack of fuel.

Paper Standardization Committee to Meet

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 13, 1922.—A meeting will be held in Washington on September 25 of the Advisory Committee of the Paper Section of the Bureau of Standards. As is well known to the trade, this advisory committee was appointed by the American Paper and Pulp Association and its purpose is to confer with officials of the Bureau of Standards in connection with standardization work.

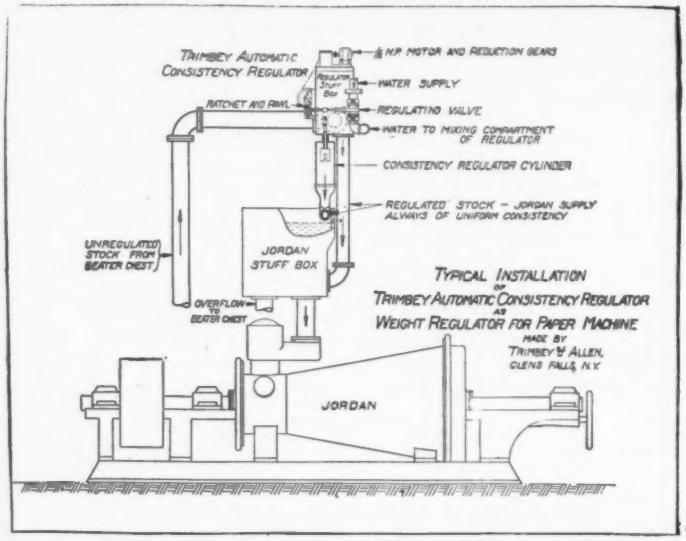
Leo Shlick Occupying Larger Quarters

[FROM OUR REGULAR CORRESPONDENT.]

BOSTON, Mass., September 11, 1922.—Owing to constantly increasing business, Leo Shlick, M. E., consulting and designing engineer and mill architect, has purchased and is now occupying larger quarters at 314 Beacon street, where his main offices are located.

XUM

UNIFORM STOCK


TRIMBEY AUTOMATIC CONSISTENCY REGULATOR
½ H.P. MOTOR AND REDUCTION GEARS
WATER SUPPLY
REGULATING VALVE
WATER TO MIXING COMPARTMENT OF REGULATOR
CONSISTENCY REGULATOR CYLINDER
REGULATED STOCK – JORDAN SUPPLY ALWAYS OF UNIFORM CONSISTENCY
RATCHET AND PAWL
UNREGULATED STOCK FROM BEATER CHEST
JORDAN STUFF BOX
OVERFLOW TO BEATER CHEST
TYPICAL INSTALLATION OF TRIMBEY AUTOMATIC CONSISTENCY REGULATOR AS WEIGHT REGULATOR FOR PAPER MACHINE
MADE BY TRIMBEY & ALLEN, GLENS FALLS, N.Y.
JORDAN

This is the machine that will regulate your paper stock to a uniform consistency, thus insuring UNIFORM BRUSHING ACTION at the Jordan. Given stock of uniform character and consistency going on to the wire you will get UNIFORM WEIGHTS and UNIFORM RUNNING CONDITIONS.

This regulator will also cause to be delivered at Beaters, Mixers or Bleachers, stock of a set, uniform consistency.

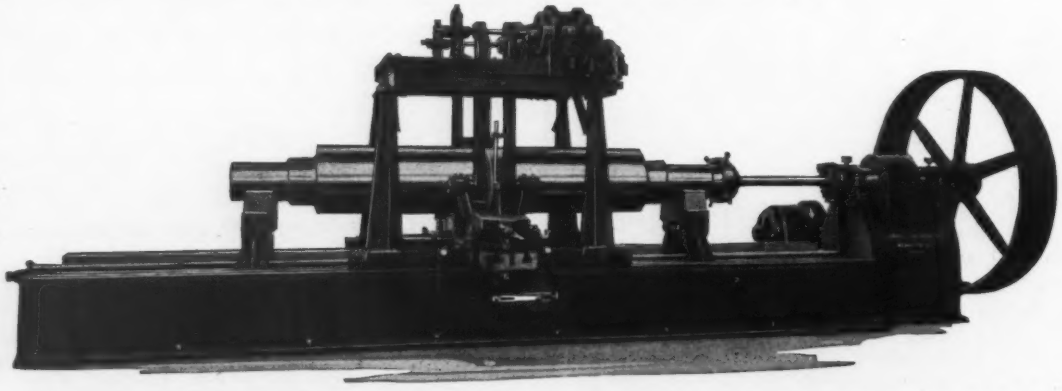
See our exhibit. Booth 515, 8th Exposition of Chemical Industries, Grand Central Palace, Sept. 11-16.

TRIMBEY MACHINE WORKS **Glens Falls, N. Y.**

M. G. TIBBITTS, *Sales Manager*

LOBDELL

ROLL GRINDERS are the only machines of the kind fitted with automatic crowning device which develops a perfect crown without the use of a guide or former and repeated trying for the correct setting.



LOBDELL Calenders are equipped with Patent Electric Motor, Hydraulic or Ratchet Lift all operated from the floor.

LOBDELL Micrometer Calipers are handy and accurate.

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Section of the

Technical Association of the Pulp and Paper Industry

AN ORGANIZATION FOR THE ENCOURAGEMENT OF ORIGINAL INVESTIGATION AND RESEARCH WORK IN MILL ENGINEERING AND THE CHEMISTRY OF PAPER, CELLULOSE AND PAPER-MAKING FIBERS GENERALLY; IT AIMS TO PROVIDE MEANS FOR THE INTERCHANGE OF IDEAS AMONG ITS MEMBERS IN ORDER THAT PROCESSES OF MANUFACTURE MAY BE MADE MORE EFFICIENT AND IMPROVED ALONG TECHNICAL LINES.

Conducted by W.G.MacNAUGHTON, Secretary

FALL MEETING OF THE TECHNICAL ASSOCIATION

The fall meeting of the Technical Association of the Pulp and Paper Industry will be held on Monday and Tuesday, October 9 and 10, at the Hotel Wolverine, Detroit, Mich.

Business Session

On Monday morning, beginning at nine-thirty, a business session will be held at which progress reports of the standing committees will be received and other business transacted.

Waste in the Industry

The afternoon of Monday will be devoted to a general session on waste in the industry. Robert B. Wolf, who is in charge of this, has a very strong committee working with him and it is expected that material progress will be made.

Besides a discussion of the general procedure to be followed, the two special phases that were selected for first consideration will be dealt with. These are fiber loss in mill effluent and barking drum refuse.

Committee on Waste in the Industry

As will be noted from the personnel of the committee, the industry is extremely well represented in all its branches as well as engineers and government bodies, particularly the Forest Products Laboratory, Madison, Wis.:

R. B. Wolf, *chairman*, 42 Broadway, New York, N. Y.; G. D. Bearce, *vice-chairman*, News Print Service Bureau, 342 Madison avenue, New York, N. Y.; W. G. MacNaughton, *secretary*, Technical Association, 18 East 41st street, New York, N. Y.; O. L. Berger, G. D. Jenssen Company, 200 Fifth avenue, New York, N. Y.; H. P. Carruth, Mead Pulp & Paper Company, Chillicothe, O.; P. K. Fletcher, Fletcher Paper Company, Alpena, Mich; H. H. Hanson, Eastern Manufacturing Company, Bangor, Me.; F. R. Hyatt, International Paper Company, Glens Falls, N. Y.; H. O. Keay, Laurentide Company, Ltd., Grand Mere, Que.; Ernst Mahler, Kimberly-Clark Company, Neenah, Wis.; F. J. Morrison, Newton Falls Paper Company, Newton Falls, N. Y.; H. F. Obermanns, Hamermill Paper Company, Erie, Pa.; J. E. Plumstead, Jessup & Moore Paper Company, Wilmington, Del.; R. B. Robertson, Champion Fiber Company, Canton, N. C.; J. D. Rue, Forest Products Laboratory, Madison, Wis.; H. S. Taylor, Management Engineering & Development Company, Dayton, O.

Barking Drum Refuse

During the past month tests have been conducted on the performance of the best known types of bark presses. These tests were run under the co-operation of the Waste Committee, Forest Products Laboratory, the plant engineers, and the bark press designers. A report of the test will be presented at this meeting and arrangements will also be made to continue the study with evaporative efficiency tests to show the value of the pressed bark as fuel.

Sectional Meetings

On Tuesday morning there will be two sectional meetings, one on paper testing under the chairmanship of Frederick A. Curtis, and the other on drying under the charge of Frederick C. Clark.

Drying

This subject has been carried on by the Service to Members Committee under the direction of Frederick C. Clark. A report of progress will be presented and further plans decided upon.

It is planned to present a "drying code" similar in general to the boiler code for conducting tests of boiler plant efficiency. This will be discussed and, if possible, adopted. Records of various co-operating plants will also be given.

Plant Visits

Tuesday afternoon will be left free for members to make plant visits to mills in the vicinity of Detroit or to automobile factories or elsewhere in the section. It is expected that invitations will be received from Detroit Sulphite Pulp and Paper Company and the Port Huron Sulphite and Paper Company for members to visit these plants.

Fall Meeting of T. A. P. P. I.

TIME: October 9 and 10, 1922.

PLACE: Hotel Wolverine, Detroit, Mich.

Program

Monday, October 9.

9:30 A. M. Business Session.—George E. Williamson, chairman.
Amendments to the Constitution.
Reports of Committees.
Vocational Education.—R. S. Hatch.

2:00 P. M. Waste in the Industry.—R. B. Wolf, chairman; George D. Bearce, vice-chairman.
Procedure:
Fiber Loss Through Mill Effluent.
Barking Drum Refuse:
Report of bark pressing tests.
Evaporative efficiency of bark.

7:00 P. M. Dinner.

Tuesday, October 10.

9:30 A. M. Sectional Meeting on Paper Testing.—F. A. Curtis, chairman. Sectional Meeting on Drying Paper.—F. C. Clark, chairman.

Although arrangements have been made for the fall meeting and its sessions it will be necessary for members who attend to make their own reservations for hotel accommodation while in Detroit.

XUM

CONTINUOUS DRUM FILTERS IN PULP AND PAPER MILLS*

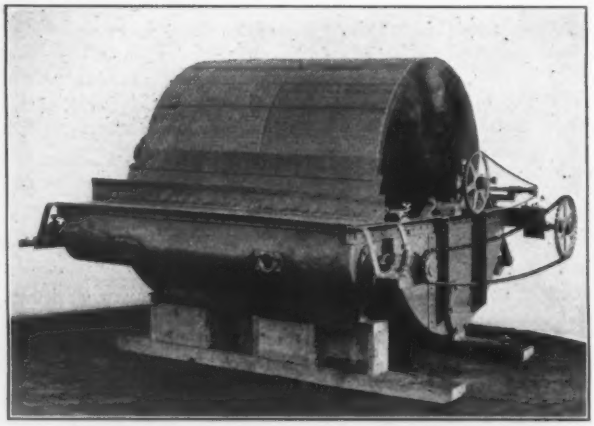
By H. A. Morrison, Oliver Continuous Filter Company, New York

Peculiar as it may seem, operators and executives in any given industry ordinarily confine their investigations to their own industry when seeking improved methods. Most mining engineers have no knowledge of the leather industry; chemical manufacturers never invade a ship-yard; nor are paper makers acquainted with the details of sewage disposal or the technology of beet sugar manufacture. However, it is the writer's firm conviction that the consulting engineer will attain greatest efficiency through careful study of every kind and type of technical activity. This may be considered a backward step since it draws away from the modern Mecca: specialization. Still, does not specialization lead to provincialism if not applied broadly?

Equipment manufacturers, through their engineers, can frequently benefit industries by adapting to one trade an article that has been developed for another field. For instance: they may transfer a screen, a thickener or a filter, developed for a starch house or a sugar refinery, to a pulp mill. Such interchange of ideas and methods is beneficial to all and, in the fullest sense, constitutes genuine progress.

Continuous drum filters have been in general use in metallurgical, chemical and sugar works during the past ten years, but were only introduced into pulp mills within the last three years. This tardy application of a perfectly obvious improvement may denote either lack of enterprise on the part of the filter manufacturers, or a policy of inertia in the paper industry, or both.

The following uses of drum filters in pulp mills are fairly well developed at this time, and in them continuous vacuum filters of drum type have proven their worth. It is beyond the scope of this article to cover each application in detail, but enough may be said



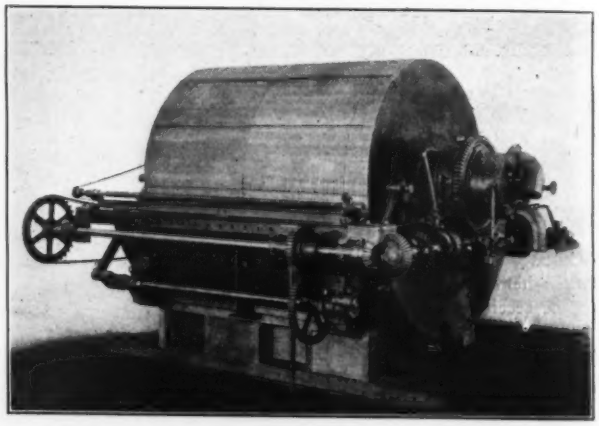
6 x 6 Steel Drum Filter with Repulper, Monel Cover

to obviate confusion of ideas. In chronological order the applications are:

1. Caustic Recovery.
2. Brown Stock Washing.
3. Thickening Before Bleaching.
4. Deckers and Save Alls.

The first use of continuous drum filters in pulp mills was for recovery of caustic from lime mud in soda mills. Large numbers of filters are now used for this purpose, and the method has been extended, with but slight modifications, to wash sulphate lime mud.

Discussion of continuous filtration of lime mud in detail is out of place here. The subject has already been covered in an article entitled, "Continuous Filtration of Lime Mud in Manufacture of Caustic Soda," which appeared in "The Paper Industry" for February, 1921. However, the outstanding advantages of the continuous drum filter over the older method of settling and decanting



Steel Drum Filter, with Repulper, Monel Cloth Cover

are worthy of mention. The filter performs an exact and non-variable duty, delivering cake with uniform moisture content, at a regular rate. A relatively small amount of wash water effects a definite displacement of caustic so that losses of the latter are reduced. In contrast to this, decanting is always subject to variation, as no two charges will have identical settling rates. Washing in tanks is mainly by dilution rather than by displacement as on a continuous drum filter. The waste sludge, leaving the settlers, is in liquid form and cannot be either stored as a solid or economically reburned. Even when excessive amounts of wash water are used with decantation, average caustic losses are more than double the loss when filters are employed. High losses—up to 2 per cent caustic in the waste sludge—are common in decantation plants. Cake leaving filters averages under 40 per cent moisture and under 0.3 per cent caustic, basis dry weight of cake, in dozens of mills where filters are used. Floor space economy, labor and caustic savings, and reduced evaporator load, all result from the use of filters in place of settlers.

Many kraft mills use leaching vats and wash their lime mud by percolation. Filters are now generally used, and give the utmost satisfaction. Two small continuous drum filters, size 5′ 3″ diameter by 8′ 0″ face, take the place of fifteen leaching vats, each 4′ deep by 10′ wide by 20′ long. Modifications of the cook liquor (for example, the use of sulphur in a soda liquor) will decrease the filter output, as compared to the straight soda process; but in all cases the unit capacity of continuous drum filters is satisfactorily high.

Monel metal cloth, of fine mesh, is ordinarily employed as a filter medium for caustic liquors as it is resistant to corrosive action. Monel metal cloth of 300 mesh is obtainable in various weaves, and we have records of such cloth in continuous service for over three years. Nickel cloth of 500 mesh may also be obtained.

* Read at the meeting of the Technical Association of the Pulp and Paper Industry at the National Exposition of Chemical Industries, Grand Central Palace, New York, September 11-16, 1922.

Brown Stock Washing

Washing of digested soda pulp on continuous drum filters was developed because the pan washing system, commonly used, followed the same general course as the "leaching by gravity in deep tanks" method of early metallurgists. Ore leached by this process was often badly washed, the time factor was variable, and removal of the washed ore from the leaching tanks was expensive. Continuous filters have almost entirely replaced leaching tanks in certain branches of metallurgy, and there is ample reason to believe that wash pans will meet the same fate in competition with filters.

The essential advantage in washing pulp on a filter is that the weak liquor and hot water washes are applied evenly to each particle of the comparatively thin cake of pulp. High vacuum removes the liquor from the cake continuously, and there is no diffusion or mixing of liquor and wash water in the thin cake. Contrast this action with that in wash pans, wherein washing is done by dilution rather than by displacement; and in tanks up to 15′ deep there is, of necessity, constant mixing of water and liquor, due to long period of contrast (because of great depth of charge) and to variations in porosity in different parts of the batch.

Evaporator feed liquor from a continuous drum filter need not be diluted more than 1° Bé. by the washing operation. Contrast this with pan washing dilution, which, in the best soda mills, approximates 4° to 5° Bé.

On kraft and other varieties of sulphate pulp, the diffusion battery is in general use for recovery of cook liquor. Diffusers conserve heat units and reduce liquor dilution, but do poor washing and show high soda losses. Continuous drum filters show numerous advantages over diffusers for washing sulphate, but the chief economy is in decreased soda losses. Average kraft mills lose 125 lb. soda (as Na_2SO_4) in washing a ton of pulp, bone dry basis, while a drum filter readily reduces this loss to only 35 lb. The non use of diffusers on soda stock is self-evident admission that they do poor washing.

Brown stock washing on continuous drum filters is discussed in "The Paper Industry" for January, 1922, under the title of "Continuous Automatic Washing of Wood Pulp," and those interested are referred to that article.

Thickening Before Bleaching

Manufacturers of bleached stock are now taking an active interest in bleaching at high density. It is known that when pulp is sent to the bleachers at around 30 per cent air dry, shrinkage under bleach action is reduced 25 per cent. Economies in bleach and in coal, together with complete elimination of organic dirt from rotten wood, etc., give a net advantage of fully $4.00 per ton of pulp in favor of high density bleaching. (See "Wolf Bleacher in Successful Operation at Newton Falls" in "United States Paper Maker" of April 15, 1922, and "Advantages of Bleaching Pulp at High Density," by Robert W. Wolf, in PAPER TRADE JOURNAL of June 1, 1922.)

Drum filters will uniformly deliver pulp at proper density to the bleachers. The filters require only the most casual attention and consume but little power. Metal cloth is the best filter medium, and upkeep and repairs are nominal. Labor and felt costs are incomparably lower than when using wet machines.

Highest capacities are obtained when stock is filtered at about 1 per cent density, but satisfactory results are secured on 0.5 per cent stock. In all cases the filtrate is remarkably free of fiber. A continuous drum filter for thickening 30 tons fiber (bone dry basis) in 24 hours will require about 25 H. P. for driving filter, dry vacuum pump and solution pumps.

Deckers and Save-Alls

Any good save-all recovers enough fiber from paper machine white water to more than offset its installation and operating costs; but a save-all that recovers no more than 50 per cent of the total pulp in the white water should be called a "half save-all." Well operated news print mills are nearly all fully equipped with up-to-date save-alls, yet their regular daily stock losses exceed 3 per cent of output.

Certain mills have cut their save-alls out of the system, and are using inclined screens instead. The latter make an almost equivalent recovery and require no attendance or power.

Let us assume that a mill makes 250 tons news print daily and loses 3 per cent, or 7.5 tons, in its white water. The mill makes 200 tons ground wood and 50 tons sulphite, and the only losses are from the inside end of the wet end of the paper machines.

Aside from the slight cost of finishing into paper, the pulp lost has the same value per unit as that realized for paper at the mill. With news print at $75.00 per ton, let us assume the lost pulp to be worth $50.00 per ton, then the daily loss is 7.5 times 50 or $375.00.

In point of fact, the lost pulp is more valuable per ton than any other portion of the output since it is the most finely divided and, if retained, would render the stock less free, "fill" the sheet, and by aiding the felting action, increase both opacity and strength. Therefore, the machine speed could be increased at least 5 per cent and less "broke" would be returned to the beaters. Present practice necessitates grinding to produce excess wood flour to offset that now lost in white water and leave sufficient amount to insure good handling on the paper machine. With filters none of the wood flour is lost, so that no excess is required and power for grinding is accordingly reduced.

Value of Drum Filters

The foregoing is not news to pulp and paper men, but what can be done to correct the trouble? The continuous drum filter answers the question, as it will (1) make a complete recovery of all solids in white water, (2) operate automatically, (3) require slight outlay for repairs and operation, and (4) cost little to install.

Based upon a mill producing 250 tons of news print per day, and considering all installation, maintenance and operating expense, there is a net profit approximating $100,000.00 per year due to using continuous drum filters for deckers and save alls.

In addition to the four uses mentioned, there are several other places in pulp and paper mills where continuous drum filters can apparently be employed to reduce production costs. Co-operation between the equipment manufacturers and pulp and paper makers will insure proper development of these additional applications.

The use of continuous drum filters in the paper industry means less waste, higher efficiency, and greater production per man employed.

To Begin Work on Paper Mill of Meade Fibre Co.

BRISTOL, Tenn., September 11, 1922.—Work is expected to begin in the next few days on the new $1,000,000 paper plant of the Meade Fiber Company, at Kingsport, Tenn., according to an announcement made by J. H. Thickens, general manager of the concern, one of the largest of its kind in the South. The new plant will be controlled by the fiber company and will have three large factory buildings constructed of brick, steel and concrete.

High-grade paper for books and magazines will be manufactured at the new plant which will give employment to about 350 persons. It is expected that the building will be ready for occupancy within six months. The new structures will be located a short distance from the units of the Meade Fibre Company.

By defeating the A. G. Nelson Paper Company baseball team, to the tune of 3-1, the Lasher & Lathrop nine tied this aggregation for first place honors in the New York Paper Merchants' Baseball League.

XUM

THE APPLICATION OF RECORDING INSTRUMENTS IN THE PULP AND PAPER INDUSTRY*

By L. G. Bean, The Bristol Company, Waterbury, Conn.

Recording instruments have been in commercial use on varied manufacturing processes for some thirty years, but not until comparatively recent times have their full advantages and great helpfulness in the manufacture of pulp and paper been appreciated. The increased use of chemical control and modern methods have eliminated many hit-and-miss practices and substituted in their place methods based on definite knowledge of the qualities and conditions entering into any operation. The object of the recording instrument is to place this knowledge in its most desirable form before all parties concerned. The fact that any variable quantities may be registered in graphic form gives to this type of instrument the following two distinct advantages over any ordinary indicating instrument:

1. They furnish the operator of any process with an accurate guide as to at just what rate and to what extent any change in the process is taking place.

2. They furnish a filable record of the varying conditions which enter into the process and serve as a check in the hands of the management to see that the best operating conditions are maintained.

Applicable to all Processes

Recording instruments are applicable to practically all processes for the measurement and recording of pressure, temperature, humidity, speed, liquid level, motion, flow, time and electricity. To mention all of the uses to which these instruments are being put at present in the pulp and paper mills would be impossible, but the following will give some of the more common applications to which they are adapted in the different types of pulp and paper plants. The fact that one large pulp company has nearly a thousand of these recorders in actual operation shows their universal application.

Use in Ground Wood Pulp Mills

In ground wood mills the character of the pulp produced depends largely upon the speed of the stones and the pressure of the wood against the stones. The careful observation of the two components, speed and pressure, as given by a recording tachometer and recording pressure gauge, will insure a most even quality of pulp. One eastern mill has 36 of its grinders equipped in this manner, which is especially to be recommended when water power is used. If the grinders are motor driven, then recording wattmeters are to be recommended in place of tachometers and the grinder men instructed to operate their machines between a given limit on both the pressure and wattmeter charts. Recording thermometers should then be installed with the sensitive bulbs immersed in the ground wood from each stone. If the pulp is ground too cold, small bundles of fibers result instead of single fibers and consequently poor felting qualities; if the pulp is ground too hot, then a worthless flour pulp results as well as excessive wear on the stones. 140° is a good average for this work and a recorder with a range of 20° to 180° is to be generally recommended. The bleaching instruments will be considered separately.

Sulphite Process

In the sulphite process recording instruments find a most varied application. Undoubtedly, the most important use here is in connection with the digesters. Each digester of any modern plant should be equipped with a recording pressure gauge and recording thermometer. The thermometers generally utilize a chart with a range of approximately 140 to 330° F. Charts calibrated in degrees Centigrade, with about the corresponding range have been used to considerable extent by many of the western plants. The thermometer used here should be either of the so-termed "vapor tension type" or "gas filled type." Mercury filled instruments are not well adapted to this use as they are frequently affected by temperature changes along the tubing connecting the sensitive bulb to the instrument. The sensitive bulb used with these instruments is generally constructed of copper and protected by a heavy cast bronze protection well which is entered through the wall of the digester and held tight by means of a nut and washer on the outside of the digester. A fixture designed for this purpose has met with most general approval in digester plants, in that it is easily installed and allows the sensitive bulb to be withdrawn for testing without interfering with the operation of the digester. Recording pressure gauges used on such apparatus are furnished with an oil seal filled with glycerine or some other non-active agent to prevent the fumes from the digester attacking the interior of the instrument.

A common method of operating digesters is for the operator to be furnished with charts which have been marked by means of a template with the curve showing the rate at which the temperature and pressure in the digester is to be raised. The operator then has only to make the red line of the instrument pen follow the pencil line drawn on the chart, and a uniform and proper cook will result. Such a method also prevents the burning of the chips, which often occurs if the process is carried too fast. Twelve-hour charts are often used in the "short cook" process with the consequent open time division, although the twenty-four-hour charts are more satisfactory for most operations.

In the making of sulphurous acid used in the sulphite plants, recorders are used to great advantage. The sulphur burners are generally equipped with recording pyrometers and the proper record on these instruments assures the superintendent that over-heating is not taking place, together with the attending sublimation. The most economical use of sulphur will result if the burning temperature is kept at the proper point for correct combustion. The instruments used here are generally combination indicators and recorders, and have a scale range of 1100° C. Since the best temperature for the formation of H_2SO_4 is from 200 to 900° C., and as this is not desired, the gas (SO_2) should be produced at as high a temperature as possible and then cooled as rapidly as possible in the coolers, so that there will never be at any time any considerable volume of gas between the ranges favorable to the production of H_2SO_4. Recording thermometers in the coolers will guard this point most efficiently and prevent the formation of gypsum. Recording thermometers should then be installed in the absorption system as well as in the coolers and towers of the reclaiming system. All these will help to produce an even quality acid as the effect of temperature on acid is very marked. Cold water should be used in all towers of reclaiming systems and carefully watched by recorders.

Soda, Sulphate and Kraft Processes

Since these processes are much the same as far as the instrument needs are concerned, we will consider them collectively. On the digesters here similar thermometers and gauges are used except in place of the bronze fittings employed for the sensitive bulbs on the thermometers, steel fittings are used. Recording thermometers and vacuum gauges are then used to control the recovery process. In Soda pulp plants particularly, they play an important part when

* Read at the meeting of the Technical Association of the Pulp and Paper Industry at the National Exposition of Chemical Industries, Grand Central Palace, New York, September 11-16, 1922.

multiple evaporators are used. Sugar plants have made use of this method for years and it has now become good practice in soda pulp liquor recovery, giving a highly efficient method of control. Specific gravity recorders have also been employed in recovery systems and consist really of a float arrangement attached to the recorder pen and reading direct in degrees Baumé. In the causticizing plants temperature recorders guard the process and a temperature of about 95° C. is generally maintained in such systems as the Dorr. These recorders help to keep a high percentage of recovery. This also applies to the case of sulphate mills when the success of the mill often depends upon the chemical control of the recovery process.

In Bleaching Plants

The bleaching plants of all mills is another department in which recorders have been quite generally installed. In the first place, bleaching powder should be kept cool and dry, and this point is carefully watched by recorders. In the mixing, the temperature would not be allowed to exceed about 70° F, or the resulting bleach will be still better if this temperature is kept even lower. During the bleaching process itself, the chlorination of the fiber of the stock must be carefully watched, for if the stock runs much above 115° F., this action is liable to take place in spots if not throughout, with its consequent danger. Recording thermometers, the bulbs of which are in the stock, guard the operator against this trouble and tell him when his temperature is approaching the danger point.

Since the time allowed for bleaching depends upon the temperature and density, it is desirable to record both of these quantities, particularly the former, which is readily done. This temperature may be made to accelerate the chemical action between the chlorine and the coloring matter and hence should be carefully watched and checked by a recorder. In plants making their own chlorine by the electrolytic method recording ammeters give an excellent check on the process.

Recorders in the Beater Room

In the beater room, recorders are used frequently to show the position of the rolls of the beaters and also at just what time their position was changed. This employs a mechanical time recorder of simple construction, which has been used with good results. On hydraulically operated beaters recording pressure gauges will give the pressure on the lighter bars and roll, while if the beaters are electrically driven, recording wattmeters will record the load upon the same. This last method is being used considerably of late by a few progressive mills and very good results have been obtained by adjusting the beater so that it consumes power only between certain limits, depending upon the type of pulp desired. This same means of recorder control has been applied to Jordans as well as ordinary beaters. Liquid level gauges are also used in the beater room considerably, both on beaters and stuff chests and give, when used with a constant, an accurate measurement of the stock beaten or drawn off.

Machine Room Utility

As applied to paper machines, recording thermometers are used to record the temperature existing in the drying rolls and pressure gauges give similar information with regards to the pressure or vacuum existing in the different sections of the machine. A special thermometer fixture in which the sensitive bulb has been inserted through a journal bearing has been designed to give particularly quick and sensitive readings of the dryer roll temperatures and has greatly improved the drying process in some large mills. A contact thermocouple and pyrometer have also been used to good advantage in obtaining the actual surface temperatures of the calender rolls. At the wet end of the machine a recording pressure gauge should be applied to keep the press roll pressure as near even as possible.

The speed of the paper through the machine has long been an important factor and this is best recorded by means of an electric tachometer, the magneto of which is attached to the spring roll of the machine. This gives an accurate record in feet per minute of the paper through the machine and will show clearly the time and interval during which the machine was down for a "break" or repairs. The electric tachometer recorder may be placed any desired distance from its magneto fixture. Electric time recorders have also been used for this purpose with good success, but tachometers are generally more useful.

In Fine Paper Plants

In the fine paper plants, where paper is treated with various sizes, recording thermometers are utilized to keep this solution at its proper temperature and consistency. A similar use for recorders is found in plants making waxed papers. Fine papers, when being seasoned, are often subjected to very carefully regulated temperature and humidity conditions and recording psychrometers are the best means of keeping the conditions under complete control as desired, while the paper is drying out. There are many other uses in plants auxilliary to the ordinary paper mill and chief among these is the steam power plant. Here recorders are used on the usual applications, such as feed water temperatures, boiler pressures, flue gas temperatures, draft gauges, etc., but it may be well in concluding to make mention of the new long distance electric transmission recording system. This is used to convey pressure, temperature, liquid level, or any other reading over any distance up to several miles. In pulp mills particularly, it enables the fireman or engineer to control the pressure to the digester house or any other part of his system from the end of the line, rather than from the boiler plant. Consequently, an even pressure at the desired point is held throughout the system. The instruments work on a balanced induction circuit principle and are thus unaffected by normal changes in line voltage or frequency.

Co-operation Essential

We have now covered most of the more general uses of recorders in pulp and paper mills, but there are many other applications which individual plants have found most profitable. New needs are always arising and it is only by careful co-operation of the manufacturers of recording instruments and the users, that the best instruments for the work can be installed and the most efficient results obtained.

Throughout the entire paper mill process, from the grinder rolls to the seasoning of fine papers, the recording instrument has already come to play a most helpful part. Ever on the watch, and never sleeping, these recorders serve as silent sentinels in their dual roles of a guide for the operator and a check to the superintendent. That is why the recording instrument has come to be used so extensively in the pulp and paper industry.

File Brief Against Duty on Casein

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 13, 1922.—Although the paper manufacturers were not entirely satisfied with the tariff bill as it was in conference, no very strenuous protests were made regarding any of the paragraphs affecting the paper industry with the exception of paragraph 17A, which deals with casein.

A committee representing 75 coated paper manufacturers filed a brief with the conferees on the tariff bill. The committee is composed of the following: Martin Cantine, chairman; Charles A. Gordon, Walter D. Randall, Charles F. Shirley and Dr. Hugh P. Baker.

In the brief the committee points out misstatements made by Senator Ladd in supporting the duty of 4 cents a pound on casein and sets forth the conditions as they actually exist in the industry. The committee asks that casein be placed on the free list, but states that if it is impossible to do this, the 4-cent rate is entirely unreasonable.

TECHNICAL SECTION, PAGE 125

XUM

TESTING COLORED MATERIALS FOR FASTNESS-TO-LIGHT*

By H. S. Thayler, B. Sc., Atlas Electric Devices Co., Chicago, Ill.

Color is more and more being called upon as a medium of expression. It may be the mellow color of an old master or the gaudy colors of the billboard. A silk dress, a carton of rolled oats or even a so-called comic supplement employs colors that have been designed with great care and applied with no end of skill.

But a most important essential of color is that it shall remain as the artist or designer intended. When the colors fade or, even worse, when only part of the colors fade, the effect is destroyed. Every one who has stood and watched our national flag pass by with its bright colors flashing in the sunshine has been impressed by the sight. But, the impression would be far less effective if the colors of the flag were pale or weak.

In other words, the colors must be fast. We naturally expect greater stability of color in rugs, high grade book-bindings and in our woolen clothing than we would look for in a circus poster. It is well known that all colors fade to a greater or less degree and from a variety of causes. There is a question as to the exact nature of fading but we know that colors are weakened by chlorine and other fumes, by washing, by soap and by light. The chemical action that causes fading is fairly well understood, although this understanding is dependent in some measure upon the various theories of dyeing. It is a very simple matter to determine whether or not chemical action causes fading of color. The fading action of light, however, is not so well understood. It is known that this action is hastened by the presence of air and moisture. Also when a colored material is pressed into close contact with glass, it is much less fast than in the more natural state.

Tests for Fading

It is impossible to predict the fastness-to-light of a certain dye from a general knowledge of the dye itself. It is absolutely essential that the dye be tested in the finished product, whether the product be a textile, an ink or a colored paper. It has sometimes been suggested to substitute a chemical test for an exposure to light test and Bancroft in 1912 suggested the use of hydrogen peroxide for this purpose. Extended experiment, however, with a wide range of colors showed this test to be very unreliable. Chemists are now generally agreed that the only satisfactory thing to do is to expose the finished product directly to the fading rays of light. It then remains to adopt a light that is capable of being standardized and that, in addition, has the important commercial elements of being rapid, cheap and convenient.

The paper manufacturer, no less than other makers of colored material, is confronted with the difficulty of producing paper that is sufficiently fast to the action of sunlight to suit his customers. The purchaser of the paper in his turn is expected to put out a product of high quality and is dependent upon the paper manufacturer in so far as the original quality of the paper is concerned.

This point was brought out forcibly last winter in the case of a very large printing house in Chicago that specializes in the production of telephone directories It seems that there had been a good deal of complaint because of the fact that the cover paper used on these directories faded out rather quickly, leaving the cover shabby in appearance and making it less attractive as a medium for potential advertisers.

The "Fade-Ometer"

A combination of circumstances made it very important that this printing house decide upon its supply of cover paper for the coming year but only short space of time was available to come to a decision. The short, overcast days of winter rendered a sun test of the cover paper which was wholly inadequate and, furthermore, the manufacturers of the paper were very reluctant to make any definite statements as to what degree of fastness-to-light might be expected from their product. The printer quickly made up his mind to have the paper tested by the one reliable method in general use. This method is the FADE-OMETER, which employs the violet carbon arc as its source of light for fading purposes. When the term "fastness-to-light" is used it is understood to mean fastness-to-sunlight, which, of course, is the cause of most of the fading of colored material. It follows then that the ideal test for light-fastness would be to expose the material to the rays of the sun, but, as our printer friend found, this is not a practical thing to do, because the sun is very unobliging in a case of this sort. There is such a wide variation in the fading power of the sun's rays, dependent on the season of the year, the time of day, the latitude of the place where the tests are being made and the difference in the atmospher, that it is well nigh impossible to make a sun test that may be duplicated with any degree of certainty. Any one who has had even the slightest experience with photography knows that the exposures required are very much longer in winter than in summer, so much more so that most amateur photographers give up trying to do any winter work.

Government Tests for "Fastness"

This was expressed recently by a writer in the *American Dyestuff Reporter*, referring to a textile test:

"We may be operating a mill and have a desire to enter a bid on a Government contract. We find that after enumerating exactly the quality of the stock. weave, weight, finish, etc., and several very positive chemical tests, we are informed that the sample must stand thirty days' exposure as well as the standard sample. No account is taken as to the part of the year which shall furnish these thirty days; the latitude, however, may be presumed to be that of Philadelphia.

"It is easy to see how the mill chemist might deceive himself regarding the actual fastness of the dyes he intended using, should he make his exposures in December and then have the Quartermaster's chemist reject the goods after a test in August."

The manufacturer of paper, however, cannot allow himself to be handicapped by any such conditions and finds it absolutely essential to turn to some suitable form of artificial light for his testing purposes.

His problem would be very much simplified if he could standardize upon certain dyes with the assurance of uniform results at all times. Every manufacturer, however, knows that this is impossible. Even when the "absolute fastness" of a dye is satisfactory, it does not follow that the fastness of the goods colored with this dye will be what it should be. By absolute fastness is meant the stability of a solution of a dye when exposed to the rays of a powerful light. It remains, therefore, for the paper mill to test the finished product, if guarantees as to fastness-to-light are to be made. Also, it is important that these tests be made with a light source that is of so uniform a quality that it may be safely accepted as a standard for comparison and is also one that is accepted generally by technical laboratories.

Types of Testing Lights

There are three sources of artificial light that will occur to one as serving this purpose. First of all, the nitrogen-filled in-

*Read at the meeting of the Technical Association of the Pulp and Paper Industry at the National Exposition of Chemical Industries, Grand Central Palace, New York, September 11-16, 1922.

XUM

candescent lamp, which is used so much as a color matching lamp, would seem to be suitable, but, only a short trial is needed to demonstrate that is hopelessly slow and of no commercial value as a "fading" light, apart from any technical merit that it may possess. Although the nitrogen filled lamp seems to the eye to be of dazzling whiteness, it really is deficient in actinic rays, or rays at the violet end of the spectrum.

The mercury arc light, on the other hand, or more especially that form of it known as the quartz tube light or ultra violet light, goes to the other extreme and presents a light for fading that is extremely rich in ultra violet rays and very deficient in the visible rays of the spectrum. In fact, the spectrum of this light, as compared with sunlight, presents a curious appearance. Certain wave lengths are very pronounced with numerous bright lines in the invisible portion of the spectrum and this bright line characteristic is apparent in the visible part of the spectrum. The result is that the chemical action of the light from the quartz tube is selective in its action, whereas, the light of the sun with its nearly continuous spectrum is uniform in its chemical action. The effect of this is to cause a fading action that differs greatly from that of sunlight, so that a test made with the ultra violet light does not always give results that will be found with sunlight. This is especially true in the case of aniline colors, in which case the inaccuracies are numerous and pronounced.

An advantage of the quartz tube light is that it is very rapid in action, but, on the other hand, it undergoes a continual deterioration with age, so that the tests made at different times may not be relied upon as uniform.

The Arc Light

The remaining form of fading light is then the old familiar arc light which has been made in a variety of forms. Every one is familiar with the flaming arc with its intense light and brilliant colors. What is known as the white flame arc, employing a specially impregnated carbon to give the color of sunlight, offered at one time a promising field of investigation. The spectrum of the white flame arc is almost exactly a duplicate of the solar spectrum, but, as a commercial testing proposition, this form of arc is far from satisfactory. The electricity consumption is excessive, the special electrodes are costly and short-lived and the heat developed is so great that it is difficult to keep the test specimens at a reasonable temperature.

The enclosed arc with its lower current consumption and general adaptability to laboratory use was studied with the aid of the manufacturers of arc electrodes. The spectrum analysis of the various forms of enclosed arc gave a leading clue and there was developed a high voltage arc giving at the violet end of its spectrum a very close reproduction of the spectrum of the sun. With this as a basis, the problem was attacked of arranging this light in a convenient form so proportioned that the light intensity and the temperature would duplicate the conditions found in the midday summer sun. The Fade-Ometer was the result of this effort. And it has since justified itself by its adoption in many of the foremost technical laboratories throughout the world.

The Fade-Ometer employs the violet carbon arc mounted in a cabinet with 40 specimen holders located at a uniform distance of 10 inches from the arc itself. A pan of water provides the moisture necessary to simulate actual conditions. The arc may be arranged for different voltages and types of current.

How "Light-Fastness" Varies

In this matter of fastness-to-light, perhaps the most important thing is a satisfactory standard that users the world over can refer to. Fastness-to-light is a property that has never been at all well defined, remaining pretty much a matter of personal opinion. As an example, I might quote from the recommendation of the National Council of Dye & Colors, as published in the *Color Trade Journal* for June of this year. Fastness-to-light standards are specified as follows:

"No. 1—10 days' south exposure inside window or 10 hours to test lamp, No. 2—20 days' south exposure inside window or 20 hours to test lamp, No. 3—30 days' south exposure inside window or 30 hours to test lamp." Only a very little reflection is needed to show that this specification is so loose as to have no real value. A 10-day south exposure in the month of November, for instance, would cause less fading than a 5-hour exposure to the rays of the run in the middle of a clear July day.

Then, too, the fading power of sunlight varies widely in different parts of the world. Even in our own country the variation is very pronounced. In 1920-21 Mr. H. B. Gordon of the U. S. Testing Co., New York, made some extensive tests of fastness-to-light using the sunlight conditions found in New Jersey and in Arizona. Mr. Gordon's conclusions may be best expressed in his own words:

"The action of New Jersey summer sun was, on the average, four or five times as rapid, and that of the violet carbon arc, as used, was three or four times as rapid as that of the Arizona winter sun. The variations in relative rapidity of action are considerable, but the relation of the carbon arc to either kind of sunlight appears to be rather more constant than the relation between the two kinds of sunlight."

"The extremely rapid effect of summer sunlight in New Jersey, as compared to that of winter sunlight in Arizona, is rather surprising to one who is acquainted with the brilliancy of the sun in Arizona. It is probably due, in a great measure, to the high humidity in New Jersey."

Owing to the uncertainty of weather conditions in the Eastern part of the country, it seems that if any standard test is to be made with sunlight, it should be made in Arizona or some other part of the southwest, where weather conditions are more reliable. Probably summer sunlight would be a better standard than that of winter, but, in the writer's opinion, an artificial light, being more reproducible than sunlight and at hand when needed, is best for making standard tests. The most suitable lamp used in this study is evidently the violet carbon arc.

Fire Destroys Ground Wood Mill at Montague, Me.

[FROM OUR REGULAR CORRESPONDENT.]

MONTAGUE, Me., September 11, 1922.—Fire, supposed to have been caused by a hot box, completely destroyed the ground wood pulp mill of the International Paper Company at Montague last Tuesday, together with a small storehouse and a quantity of wood pulp. The loss is estimated at $100,000, fully covered by insurance.

The mill, which had been shut down on account of a strike since May 1, 1921, so far as the manufacture of pulp was concerned, had recently been used for rossing pulpwood, of which 20,000 cords had been on hand for some years, and a crew of 30 men was employed. The wood has been shipped at the rate of six cars a day this summer to other mills of the International Company in western Maine.

The fire started soon after 5 o'clock Tuesday afternoon, while the engineer was at the office of Superintendent White, giving notice of the hot box and announcing his intention of shutting down for an hour or two. The water tank on the mill roof was empty and as there was no other available supply of water for fire fighting with the equipment at hand the mill was burned flat. It was an old building, erected 30 years ago, but its equipment was excellent. The mill, when running at full capacity, turned out 40 tons of ground wood pulp daily.

Pike Rapids Paper Co. to Build Dam

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 13, 1922.—The Pike Rapids Paper Company has filed an application with the Federal Water Power Commission for a preliminary permit to construct a power dam on the Mississippi River at a point near Royalton, Minn.

XUM

STEEL BELTS AND THEIR APPLICATION TO THE SOLUTION OF CONVEYING PROBLEMS*

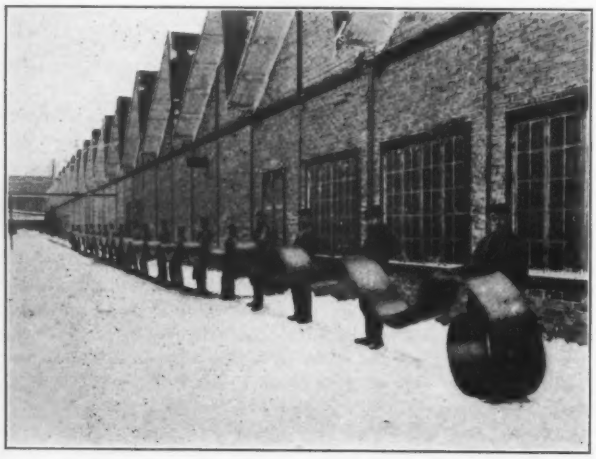
By Harry Carlson, of Sandvik Steel Works, Inc., Sandviken, Sweden

The steel belt is by no means a new development, although it only recently has been placed on the American market. During the past thirteen years it has been extensively used in Europe in the many phases of the engineering field—over 1,300 installations already having been made for conveying such materials as clinker, cement, sand, rock, ore and ore concentrate, coal, coke and charcoal, carbide, silica, soda, salt, sugar, cossettes and beet pulp, milk powder, yeast, vegetables, sweets and chocolate, deals, battens, slabs, edgings, chips and sawdust, clay, gypsum, brick and briquettes, bags, boxes, packages, steel forgings, gun cotton and glass.

Much experimentation and conscientious application has been necessary to bring it to its present state of development, where it has, without a question of doubt, demonstrated its decided superiority over conveyor belts at present employed, as well as over other types of conveyor equipment. In every installation made it has been found to be both efficient and economical.

The adaptability of steel belts for solving conveyor problems in all phases of the industrial field for all kinds of materials has by no means been completed, but is still in the process of development. Intimate co-operation between the manufacturers, who are familiar with the particular features of design so essential to steel belts, and the customer, who wants certain work performed at a given time and under given conditions, is necessary in order to arrive at the end desired.

I shall endeavor in this paper to discuss the steel belt from a general point of view, giving you an idea as to what the steel belt is, how it is set up and works. A short history of the steel belt known on the market as the Sandvik belt will undoubtedly be of interest to you.

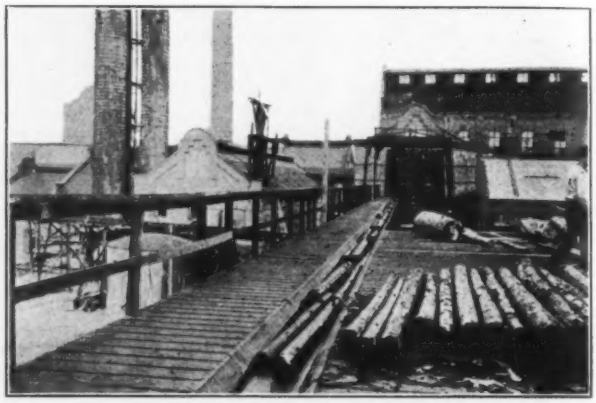


"Sandvik" Steel Belt 285 Feet Long and 16 Inches Wide

Steel Belt History

The manufacture of steel belts was started about thirteen years ago by the Sandvik Steel Works of Sandviken, Sweden, which has had a wide experience of over fifty years in the cold rolling of steel. The company had always made a specialty of high-grade cold-rolled materials, and for this purpose acquired controlling interest in a large number of the world-famous Swedish mines producing iron ores low in sulphur and phosphorus. It may be interesting to note that the expression "Swedish Steel" was originally applied to steel made from these ores.

Innumerable examples evidence the fact that no matter how good the raw materials may be, skilled labor is required to obtain a high-class finished product. The Sandvik Steel Works were among the first to produce high-grade steel; in fact, the first to produce Bessemer steel on a commercial basis, and have persistently kept up traditions. As a result, they have today at their disposal a force of labor trained through generations for this particular kind of work.



"Sandvik" Conveyor at One of Sweden's Biggest Sulphite Mills

The Sandvik steel conveyor belt was not originally manufactured for this purpose, but the application as a belt was found for the exceptionally long, wide, straight and smooth steel strips that the rolling mill was capable of producing. After patient experimenting covering a period of years, the methods of rolling, hardening and tempering were perfected and the product accordingly improved to meet its particular requirements before it was finally placed on the European market thirteen years ago.

The many attempts made to utilize steel in some shape or other, to improve the ordinary conveyor belts, and further the successful applications of the Sandvik belt in almost every phase of the industry, should evidence the fact that present belts need improvement. They can be supplanted by something better, and it is interesting to note that the steel belt in most cases more satisfactorily meets the requirements of a conveyor belt. It is self-evident that no other conveyor belt material can have the same high-wear-resisting qualities as the steel belt.

Wear on Steel Belts

It is a well-known fact that a piece of steel subjected repeatedly to stresses far below the utlimate strength will break, due to the destruction of its molecular structure, crystallization, or "fatigue." For the ordinary grade of steel used in machine building, the maximum bending stresses allowed are limited to about 12,000 lbs. per square inch; for high-grade alloyed steels the stresses allowed may run considerably higher.

* Read at the meeting of the Technical Association of the Pulp and Paper Industry at the National Exposition of Chemical Industries, Grand Central Palace, New York, September 11-16, 1932.

The Sandvik steel belt is subjected to a stress of 28,000 to 30,000 pounds per square inch when running over a standard pulley 40 inches in diameter. We might mention incidentally that in the standard practice of steel belt design the width of pulley face is ¾ of the width of belt, crowned in the usual way but made flat in the center ⅓ of the width of the pulley face. In addition to the aforementioned stresses it has to take the initial tension and the pull required, which, however, in contrast to other belts, are nominal for ordinary installations, compared to the bending stresses. The latter are determined by the proportion between the thickness of the belt and the diameter of the pulley. For practical reasons a high carbon steel strip of certain width cannot be rolled to more than a certain thickness, hence it is necessary to establish a standard diameter for pulleys, specific rules for the location of idlers, especially when the belt is to be caught up, etc.

The Sandvik belt is made of the very best Swedish charcoal steel, cold rolled, hardened and tempered—hence, it possesses a hard, smooth and dense surface, evidenced by hundreds of successful installations in the chemical field conveying wet and hot material, and running in the open air subjected to the influence of rain, snow and sunshine, and under extreme changes of temperature. The steel belt does not deteriorate when idle—the smooth surface facilitates an unexcelled cleanliness—to be obtained by the simplest means; finally, the fact that stresses due to initial tension and pull are nominal compared to bending stresses accounts for the possibility of making conveyors perforated without influencing appreciably the life of the belt, since the perforating has no influence on the bending stresses, the latter being exclusively determined by the proportion between the belt and the diameter of the pulley.

Steel Belt Specifications

At the present time it is rolled in widths up to 16 inches, one-piece lengths up to 350 feet, and thicknesses up to .04 inches. The longitudinal edges are rounded and smooth. The flexibility of the material may be judged from the fact that the coil of 300 feet of 16″ belt is sent out packed in a case 2′ square x 1′16″ deep, weighing approximately 2 lbs. per ft. run.

The Sandvik conveyor is designed in two ways, either with the conveying strand sliding on a wooden support, sometimes fitted with skirting boards, trough-like, the return strand being supported on idlers, or else both strands of the band are carried on rollers in the usual fashion. The sliding type, with or without skirting boards, is extensively used for conveying non-abrasive material. Next to no wear is caused in this type, even for conveyors of considerable length, as the surface of the runners soon acquires such a polish that the friction and consequently the power consumption is almost negligible.

As compared with flat rubber belts of the same width, the steel belt possesses greater transverse rigidity and therefore a higher capacity, as the edges, even with a one-sided load, do not yield in a downward direction. This allows a relatively broader part of the belt to be used for carrying the load. These attributes are obvious and are due to the fact that the steel belt is less flexible than the textile fabric.

The speed at which the steel belt should be run depends on the length of conveyor—ordinarily it varies between 135 and 300 ft. per minute, and capacity is thereby determined. The average speed, however, for the average length conveyor is about 200 ft. per minute. Considerable attention is given to the proper designing of feeding hoppers to ensure the maximum load per foot of belt.

The joint is an ordinary riveted lap joint with short overlap and can be made complete in less than an hour. Counter-sunk rivets are used. For punching the holes a special tool is supplied which makes the jointing work extremely simple. It has been found after extensive experiments with many different kinds of joints that the one herein mentioned is by far the simplest, most efficient and economical.

In many cases existing structure can be easily adapted to accommodate steel belts, and under favorable conditions existing end pulleys and idlers can, with a little modification, be kept in use also. Erection is comparatively simple and full instructions are supplied. Most customers undertake the erection themselves, merely having an experienced erector sent along by the manufacturers to generally inspect after completion, mount the belt, make the first joint, and start up.

Special Advantages of Steel Belting

A special feature is the remarkable ease and simplicity with which material can be discharged at any desired point along the conveyor without the use of cumbersome and expensive trippers. The belt does not stretch and the tension devices are therefore very simple, as they only have to take up trifling variations in length, caused by changes of temperature.

Unlike other conveyors, the drive can be arranged either at the head or tail ends to suit the local conditions of purchaser, and is equally efficient at either end. When required, both strands can be used simultaneously for conveying in opposite directions, and under suitable conditions the conveyor can be made reversible.

Inclines vary somewhat with the material being handled. In a general way a figure of 1 in 4 is the limit for a smooth belt which has to be scraped off for unloading, but if terminal unloading only is to be used, slats can be affixed to the belt at intervals and the inclines increased to about 1 in 2.75.

It has frequently happened that when elevators have been favored for a lay-out on account of the incline, a conveyor lay-out has satisfactorily solved the problem at lower cost and at much greater reliability and freedom from a large number of moving and wearing parts.

The steel belt conveyor is not a "cure-all," but is claimed to be simpler and more durable than the already simple band conveyor, to offer stronger material and avoid the large number of working parts of drag link and gravity bucket conveyors, and to be competitive in price.

It is obvious that the introduction of the steel belt has widened the field of application of the belt conveyor, which previously had not been suited for conveying hot and sticky materials when only the textile and rubber belts were available, and it should be welcomed by the engineer interested in the handling of materials, as the steel belt is the ideal system of conveying. Such sticky material as sugar, for instance, can be cleanly and efficiently scraped off. Sharp-edge cutting materials, such as glass, can also be transported on this belt. Finally, materials which, on account of their high temperature, cannot be economically handled on belts of rubber or balata, can be carried readily on the steel belt.

Heat Waste Elimination by Pipe Covering

The accompanying table gives the economical thickness (nearest commercial size) of 85 per cent magnesia pipe covering for various pipe sizes, steam consumption and coal prices. It is based on average figures for boiler efficiency, heating value of coal and cost of insulating applied. The pipes are assumed to contain steam continuously.

Size of pipe inches	Hot water 175° F.			Steam 5 lb. pressure			Steam 100-200 lb. pressure			Steam 200 lb. 150° F. superheat			
	$4	$6	$8	$4	$6	$8	$4	$6	$8	$4	$6	$8	Coal per ton
¾	S	S	S	S	S	1½	1½	DS	1½	DS	2	2	
1½	S	S	1½	S	S	1½	1½	DS	2	DS	2	3	
3	S	S	1½	S	S	2	DS	DS	3	DS	3	3	
6	S	1½	2	1½	1½	2	DS	DS	3	3	3	4	
12	S	1½	2	1½	1½	3	DS	DS	3	3½	4	4	
24	S	1½	2	1½	1½	3	DS	DS	4	3½	4	5	
Flat	1½	2	2½	2	2	3½	3	4	4½	4	5	6	

S. Standard thickness, about ⅞ inch for pipes smaller than 2 inch, to 1½ inch thickness for pipes over 10 inch diameter.
DS. Two standard-thick layers.
3 inches is usually made by two 1½ inch layers.

POWER

XUM

"ROTARY FILTERS FOR THE WASHING OF PAPER PULP AND FOR FILTERING AND WASHING CAUSTIC LIME MUD"*

By G. D. Dickey, Industrial Filtration Corporation

Continuous vacuum filters should be of particular interest to the paper industry, as they owe their inception to paper mill engineers. The first recorded rotary drum filters were those developed in France about 1885 for the thickening of paper pulp, and did not differ a great deal from the ordinary thickeners and save-alls used in paper mills at the present time. Several schemes were tried in conjunction with that of a rotating screen cylinder, most of them incorporating a traveling belt, which encircled the drum and then passed on to a series of rolls, where additional drying was effected.

About 1896 the Solvay Company in Belgium took out patterns on a rotating drum, which, instead of being a wire cylinder, consisted of a drum with solid ends and a perforated face, which face was covered with a canvas filtering medium. The machines were connected to large size vacuum pumps and the solids were removed by scrapers resting against the filter drums. They gave very satisfactory results in the de-watering of bicarbonate of soda, and the same design is still used in many plants. The same idea was further improved by George Moore in 1902, when he invented the multiple compartment rotary filter for the handling of gold and silver tailings in the cyanide process. With a few changes, this is the type of machine which is employed today in the chemical and industrial world for automatic filtering. One of the first installations to

Fig. I—Drum of Rotary

be made in industrial work was in 1916, when a Zenith Rotary Filter was installed in the Dupont works at Hopewell for the handling of their caustic lime mud. Since that time numerous installations have been made in causticizing plants, and sufficient time has elapsed to obtain reliable figures on their performance, and pass judgment upon their economical efficiency.

Three Separation Methods

In causticizing, there are three methods of separation in general use. The first is that of ordinary settling tanks, the second is where false bottom tanks and suction pumps are used, and the third is where filters are employed. In the first case, the separation of the sludge from the caustic liquor is by means of a series of settling tanks and decantation, and washing is by dilution. There are several objections to this method, among the most important of which are the following: First, a great deal of room is necessary for the settling tanks; second, a long

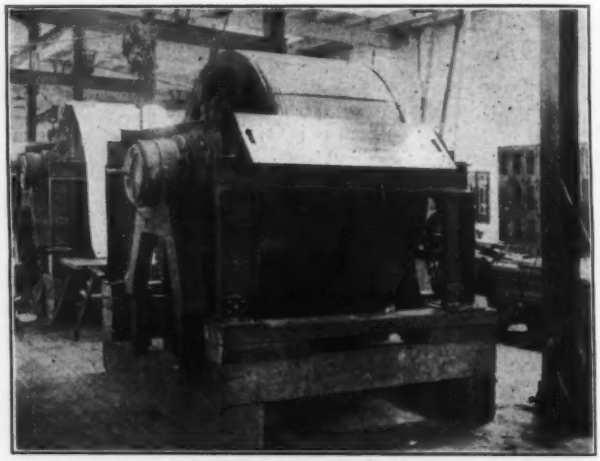


Fig. II—Machine with High Containers and Canvas Filtering Medium

period of time is required for each batch; third, more or less intelligent labor is needed; fourth, the sludge is discharged wet; fifth, there is an appreciable amount of soda lost with the discharged solids, and sixth, the final decanted liquors are very weak, making heavy work for the evaporators.

The second method, namely that of false bottom tanks in conjunction with vacuum pumps materially reduces the amount of space occupied by settling tanks, it decreases the length of the cycle of operation, and reduces the percentage of wash water needed. It has the objection, however, that the cake must either be dug out or flushed out, the solids are usually several feet thick in the filter tank, and badly cracked before washing commences so that a large proportion of the wash water runs through these cracks, giving a dilute effluent and leaving considerable soda in the cake; finally, the operation is intermittent and requires labor.

The third method, or that whereby filters are employed, may be subdivided into two classes—that where pressure leaf filters are used, and that where continuous vacuum filters are employed. The principal difference between the two is that the former requires labor and an intermittent operation, there is difficulty in maintaining proper agitation for building up a uniform cake, which is necessary for washing efficiency. Great care must be taken in emptying the container of excess sludge before admitting the wash water in order that the cake will neither crack or fall off. Finally, the replacement of the cloth is a laborious operation. The continuous filter, on the other hand, consisting as it does of a drum hung in a container

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equipped with an agitator, operates by vacuum, during every revolution of the drum picks up the solids, washes, dries and discharges them continuously and automatically, thus eliminates the objections to other methods mentioned, without embodying any new complications.

Construction of Rotary Filter

The Rotary Filter of the multiple compartment design, as illustrated (figures I-II) consists of a drum whose periphery is divided into a number of compartments, each being connected by a separate pipe line to the multiple valve hub, which is cored out to receive these lines. The compartments are covered with a wire screen suitably supported, and over this, encircling the entire drum, is stretched the filtering medium, each compartment being kept separate and distinct and giving a smooth peripheral surface to the drum. The valve hub rotates against a stationary valve cap, which is so arranged that each compartment can be subjected to suction as well as pressure during any portion of the cycle. Provision is made in the valve cap for applying suction and for drawing off the filtrate and wash water separately if desired. The filter drum is hung in a hopper bottom container, which is provided with mechanical agitation. The scraper constantly removes the filter cake as the drum revolves. Washing is accomplished by means of sprays, which play on the surface of the drum just after it emerges from the container with its accumulated solids.

The caustic lime mud may be fed directly to the rotary filter after the strike has been made, or it may be allowed to settle and the sludge only sent to the filter (which is a better procedure where it can be employed) or the sludge may be mixed with fresh water and one decantation made before feeding to the filter.

In the first case a larger filter will be necessary in order to handle the same capacities, as the sludge will be much more

TABLE I

	Mud discharged from the settling tanks to the tailing dump	Cake as discharged from Zenith rotary filter to the tailing dump
$CaCO_3$	40.02 %	51.60%
$Ca(OH)_2$	5.13	6.58
SiO_2	4.01	5.14
NaOH	2.13	0.20
$Fe_2O_3+Al_2O_3$	0.30	0.38
H_2O	48.10	35.20
Etc.	0.31	0.40
	100.00	100.00

dilute, and a greater quantity of liquor must be drawn through to deliver the same amount of discharged cake. In the second and third cases, the sizes do not differ, but in the second case, as in the first, all iron construction must be used, and as a rule, monel metal or similar material employed as a filtering medium. In the third case, where more dilute liquors are encountered, iron and wood with canvas as a filtering medium may be used, although, of course, they are not as desirable as more alkali resisting materials.

Efficiency in Washing and Drying

It has been found that the most efficient cake to wash and dry is one of about ⅜" in thickness, and as the thickness of the cake is determined by the speed at which the filter drum is turned (usually ¼ r.p.m.) the proportion of solids to liquids, temperature, etc., being constant, the desired thickness of cake can be maintained by the operator without difficulty (figure III).

As a filter cake built up by means of suction behind a filtering medium, which suction is equivalent to 14 pounds pressure, is equi-resistant and porous throughout, the application of sufficient wash water to replace the mother liquid held in the cake as a moisture content will theoretically give a clean product. This holds true in practice, for the ordinary free moisture, but there is always an amount of moisture held as a film around the individual particles and as they lie against one another in

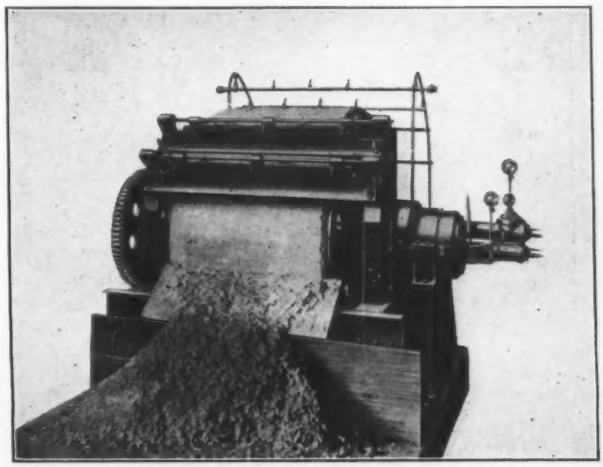

FIG. III—ROTARY FILTER DISCHARGING

normal piling, which causes about 1 per cent of causticity to be held in the discharged cake, despite the addition of excess wash water. In order to remove this final percentage economically, the cake is discharged into a small mixing tank where the wash water from a second filter is added and the resultant slurry sent over the second machine. This will enable a cake to be discharged with about .2 per cent caustic remaining in it, and in a dry enough form (30 to 35 per cent) for calcining or carrying away. (Table 1.) Usually, where calcining is carried on, however, a second machine is not used, as the cycle is closed and the caustic remaining in the cake from the first machine is not lost. The table shows the average consistency of sludge as discharged from a settling tank, as compared with that from a rotary filter.

Early Experiments

When rotary vacuum filters were first installed in paper mills for causticizing, the thought naturally arose among the paper mill engineers as to the application of this machine to the washing of paper pulp, especially as they were similar in general principle to the thickeners and save-alls with which they were familiar, the idea being to reduce the wash required by pan washers or diffusers, practically eliminate labor, as the operation would be continuous and automatic, cut down the time of washing the pulp, and reduce the soda losses. Several machines were tried out experimentally, but rather numerous difficulties were encountered; first of all, with the dilute stock encountered from the digesters, it was very difficult to build up a filter cake, even though high container machines were used, equipped with proper agitation and extra sized pipe lines for taking care of the form employed. It was finally decided to use preliminary thickening tanks, and these enabled an even cake to be built up which did not slough off as the filter drum emerged into the air. This necessitated intermittent operation in preparing the stock for feeding to the filter, however, and complicated the equipment, especially as in order to obtain a clean cake a second filter was usually necessary.

TECHNICAL SECTION, PAGE 131

XUM

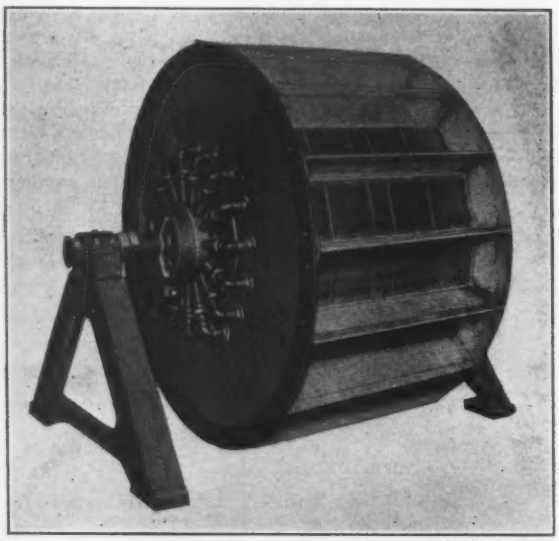

FIG. IV—THE DE-WATERER

To handle stock directly and get away from the sloughing off of the filter cake and the intermittent mixing tanks, the Rotary Hopper Dewaterer, as illustrated, was tried out. This machine had all the advantages of the Rotary Filter and in addition enabled the stock to be fed directly to the hoppers without any auxiliary thickening tanks or agitation in the machine. The de-waterer (figure IV) consists primarily of a series of hoppers, like Buchner funnels, arranged radially about a central shaft and connected to a multiple valve hub, as are the compartments of rotary filters previously described. The dilute paper stock may be fed directly from the digesters to the hoppers by means of an overheat chute. Suction is used to draw away the excess liquor, leaving a cake of the desired thickness (usually about ¾"), governed by the speed at which the machine is revolved. The cake may be washed by applying wash water from perforated pipes or sprays into the hoppers, and the hoppers discharged by compressed air or steam on to a transfer belt as they become inverted, the discharged paper stock containing about 75 per cent moisture. In some cases, it has been found desirable, as with the rotary filters, to use two machines, discharging from the first into a mixing tank, and refiltering.

Continuous Filters Required

At the present time the tendency in all lines of manufacturing is to employ continuous and automatic machinery wherever economically feasible, and this is particularly true in paper manufacturing. Therefore, the use of Continuous Rotary Filters for caustic lime mud and Rotary Hopper Dewaterers for the washing of paper pulp are of special interest, particularly because they are continuous and automatic in operation and have a low cost of maintenance.

It would be well worth the while of any paper manufacturers to investigate the possibilities of these two types of apparatus, as they appear to be the most modern and efficient machines which have been developed for their particular work up to the present time.

SAFETY AND EFFICIENCY APPLIANCES FOR THE BOILER PLANT*

BY WALTER C. EDGE, VICE-PRES. AND COMBUSTION ENGINEER OF THE PAUL B. HUYETTE CO., INC., PHILADELPHIA AND NEW YORK

Many accidents in the power plant have been caused by incorrect water level in the boiler, low water causing damage to the boiler and high water damage to the engine. To prevent such accidents, a number of years ago there was designed the Reliance Safety Water Column, the construction of which is such as to sound a shrill whistle alarm each time the water arrives at a position either too high or too low in the boiler. Improvements in recent years on this column have made it possible to not only sound a whistle but also to cause a bell to sound or light to flash in the office of the chief engineer or any other distant point desired. To this electrical connection can also be added a record to keep track of each time the improper water level is being carried in the boiler.

There has been, on the part of a few, an erroneous impression regarding safety water columns. This impression was to the effect that the water column was placed on the boiler to inform the fireman that it was time to turn on or off the boiler feed water. This is not the proper use at all of a safety water column. It is placed on the boiler rather to inform those in authority whether or not the fireman has paid close enough attention to the water line and whether he has permitted the water to arrive at a point too high or too low for safety.

Old Style Gauges Dangerous

Many accidents have also been caused by old style water gauges and gauge cocks where it was necessary for the fireman to climb up a ladder and shut off the water gauge and in many cases climb the ladder to try the gauge cock. Mr. Paul B. Huyette years ago saw the need of something more convenient and designed the PBH quick-closing, chain-operated water gauge. This gauge has a quadruple thread and can be fully opened by a quarter turn of the valve. Both the stem nut and the compression nut, which takes the gauge glass, were made extremely large to prevent leakage under high pressures. In fact, the gauge glass nut can be tightened with the fingers sufficiently to prevent leakage. To close the gauge, it is only necessary for the fireman to give a pull on a chain within easy reach of the floor.

A few years later, Mr. Huyette carried this same idea further and designed what is known as the PBH quick-opening, self-closing gauge cock. This can also be operated by a chain from the floor. The weight fitted on the stem of the cock makes it self closing. It opens and closes with a turning motion, the same way exactly that a valve is opened and closed. A copper composition pencil is fitted in the end of the stem. This comes in contact with a brass seat, therefore, making an absolutely tight joint with all of the wear placed on the pencil, which can be renewed for a few cents. These cocks, with ordinary care and attention, last for years. At the present time, there are upwards of 100,000 boilers equipped with PBH water gauges and gauge cocks, the fittings having been adopted as standard by many of the boiler companies.

Numerous boiler room attendants have been injured by flying glass when a gauge glass breaks. As protection to the boiler room men, a few years ago, Mr. Huyette designed and perfected what is now known as the PBH gauge glass protector. This is really a glass guard placed around the gauge glass so that the water is plainly visible right through the protector. In the construction of the protector, "Safetee Glass" is employed which will not fly or shatter; consequently the former hazard of the boiler room attendants is eliminated and in addition it has been proved that gauge glasses last for a much longer period with this protector

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surrounding them as the cold drafts play an important part in breaking gauge glasses and, of course, with the protector in use, the drafts striking the gauge glass are warded off.

Fuel Economy

In recent years, the necessity for economy in burning fuel has been brought out forcibly and thousands of plants are now making a thorough study in the theory and practice of combustion. Engineers have discovered that one of the first points to which attention must be given is the drafts employed in burning the fuel. In many boiler plants today, however, every boiler in the plant is operated with a different draft. If, therefore, a plant contains ten boilers, this naturally presents ten different combustion problems which must be studied; hence the necessity of first equalizing these drafts by regulating the hand damper with which each boiler is equipped.

To measure the draft over the fire, which is by far the best place to take the readings, a draft sensitive enough to head in hundredths of an inch should be employed. The Hays differential draft gauge was designed by Joseph W. Hays for this particular purpose. The gauge is so designed that it can expand and contract considerably with no danger of breakage. It can be placed, therefore, right on the boiler front in full view of the fireman.

Noting Fuel Resistance

A micrometer screw or plunger is fitted into the oil well, making it possible to bring the liquid in the gauge to the zero point by a simple turn of the thumb screw. This is of decided advantage in calibrating the gauge. A copper flexible connection fitted to the oil well is equipped with a standard ¼" union, making it possible to connect the gauge direct to ¼" pipe and, therefore, eliminate all rubber tubing. With a gauge of this type on the boiler front, any change whatever in fuel resistance can be instantly noted. Therefore, slight holes in the fire, fires too thick or too thin or any other condition which would tend to lower efficiency can be instantly spotted and corrected; in fact, a differential draft gauge is of such extreme value in the boiler plant and so small in cost that it does not behoove any engineer to attempt to run a boiler plant without draft gauges on each boiler.

Analyzing Flue Gases

In order to make a study of drafts and to know positively what draft is best for any particular load condition, it is necessary to make a study of the escaping flue gases. For this purpose, Joseph W. Hays invented what is known as the Hays Gas Analysis Instrument. This instrument is constructed in a small metal case with very little rubber tubing. Steel wool is used in the absorption pipettes. This serves to cut the gas up into small molecules and also gives considerable exposed surface to the chemical reagent, thus making for extremely rapid absorption. A test for CO_2 can be made in 30 seconds and a complete analysis for CO_2, O_2 and CO in from three to five minutes.

Spasmodic tests run with a hand instrument, while they are of considerable value, do not by any means indicate that the plant is running at a high degree of efficiency. To maintain high efficiency, it is essential that a continuous record of CO_2 in the flue gases be made. Toward this end, Mr. Joseph W. Hays invented and designed the Hays CO_2 & Draft Recorder. This recorder will give a complete 24-hour record of both CO_2 and draft on the same chart, thus making it possible for the engineer in authority to not only know at what time during the 24-hour period the CO_2 was running low but also in most cases what caused it to run low as the draft record plays a prominent part in discovering the cause for low CO_2.

For instance, a hole in the fire will not only bring down the CO_2 but also bring down the draft. Fire covered too heavy with fuel in one charge will ordinarily bring down the CO_2 and send up the draft and there are many other points of advantage in having the combined record of draft and CO_2 on the same chart.

Efficiency of Recorders

Each Hays Recorder is also equipped with a low efficiency alarm contact. This contact is adjustable and can be set to sound at any percentage of CO_2 desired. It will then sound at that percentage and everything below it. As many bells and buzzers can be placed on the circuit as desired or electric bulbs can be employed where wanted.

One need only visit a number of different boiler plants and watch the firemen work to be entirely convinced as to the real meaning of CO_2 recorders in maintaining high efficiency. Different methods of firing are found among various firemen. Some put on enough coal to last for an hour; others put on a few shovelfuls only at a time. Some coke the fire in the front; others coke the fire in the back. What method is best suited to the plant is hard indeed to ascertain without instruments to indicate the results being obtained. However, in the large majority of cases, the light firing system is by far the best in view of the fact that it requires temperature to completely burn the fuel, and if the fire is covered with fuel, the temperature is considerably lowered and some unburned gas escapes; particularly the hydrogen which is usually liberated within a few minutes after being placed on the fuel bed. Hydrogen, of course, is extremely high in heat value, containing four times as many heat units as carbon.

The Elimination of CO

There is much theory published regarding the elimination of CO and in most cases writers states that CO is formed due to lack of air and the furnace should have more air when CO is present. I have personally found, from numerous tests, that CO is more likely to occur at 10% CO_2 and below 10 than it is if the CO_2 is constantly carried at 14 and 15% CO_2.

In a recent test, as high as ⅛/10% CO was found at 9% CO_2. Rather than give the fire more air, the air supply was decreased and the fire leveled. The CO_2 was increased until it finally reached 16.2, at which time there was but 6/10 of 1% CO in the flue gases.

My studies and tests along this line have caused me to believe that far more CO is likely to be present with low temperatures and large volumes of excess air than would be found under the higher temperatures with low quantities of excess air such as are present at 15% CO_2. In other words, a far better condition would be 35% excess air under a temperature of 2,800 degrees than 100% excess air under a temperature of 2,300 degrees; the first being equivalent to approximately 15% CO_2, the second being equivalent to approximately 10% CO_2, for certainly at 15% CO_2 we have better mixture, higher temperature and comparatively more space due to the lesser volume of gas, and when you consider that the causes of CO in their proper order are Lack of Space, Lack of Temperature, Lack of Mixture, Lack of Air and that we obtain the first three of these with high CO_2, it is apparent that there would be less likelihood of CO existing.

The principle of the Hays recorder follows very closely the principle of the orsat, known to all engineers and chemists and used the world over as the standard for accuracy. The gas is accurately measured and brought to atmospheric pressure and then is maintained at a constant temperature throughout the analysis by means of water jacket surrounding the measuring and absorption pipettes. The design of the machine is such that the fresh water entering the instrument never comes in contact with the gas measured for analysis. This is of extreme importance when you consider the fact that fresh water will absorb CO_2.

A sufficient number of heavy moulded glass parts is used to make the entire operation of the recorder visible to the eye without weakening the construction.

In view of the fact that such large savings in fuel have been made in power plants of all kinds and sizes by the use of gas analysis apparatus and draft gauges, a fact which is known to most all chemists and engineers, action should be taken in all establishments that have not made this study for the sake of fuel economy.

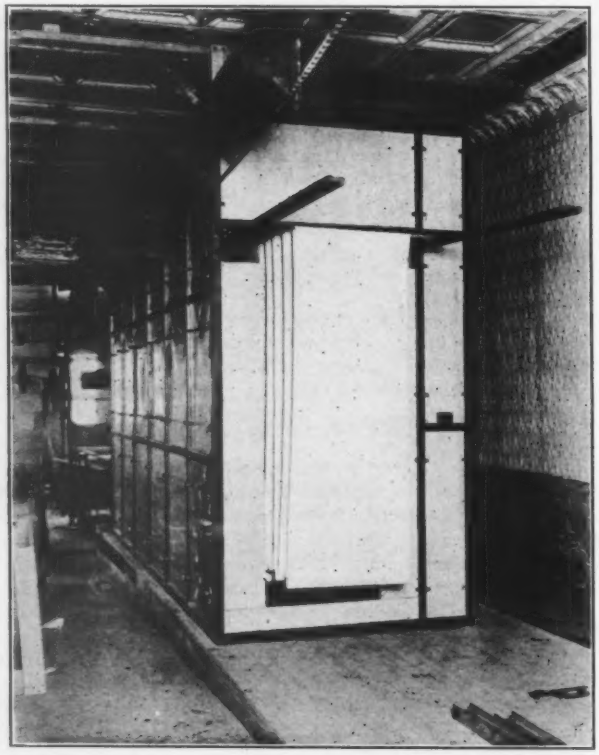
TECHNICAL SECTION, PAGE 133

XUM

THE ORIGINAL DRYER APPLIED TO WALL-PAPER AND COATED PAPER*

By Jerome D. Stein, District Mgr., Dryer Division, Grinnell Company, Inc., New York

The Grinnell Wall-Paper and Coated Paper Dryers were only offered to the trade after years of laboratory and field experience and their performance is absolutely guaranteed. Before selling any equipment, we send an engineer to carefully study local conditions existing at a plant and then dry samples of the wet material at our research laboratories. The dried samples are returned to the manufacturer for his inspection, and the quality of the finished product must receive his approval before anything further is done. As a result of these tests, which are very carefully made under the supervision of a trained technical corps, we are in a position to recommend the most efficient and economically sized unit as well as absolutely guarantee its performance.



Wall-paper Electrically Heated

The physical and chemical characteristics of the wet and dried product are the primary factors in deciding on the proper type of drying equipment to install. The most efficient method of handling the product, the air temperatures, volumes, velocities and humidity are all dependent on this deciding factor. Unless one has wide experience with the nature and conditions of the product, or as a result of thorough and exhaustive laboratory tests, it is a waste of time to make any calculations or recommendations, until these are absolutely determined.

Mechanical Design

Then the mechanical design of the Grinnel Dryer is taken up. Our engineers must now provide for (1) an adequate heat supply, (2) a sufficient amount of air to absorb the moisture evaporated and removal of this air, (3) a proper rate of evaporation from the material requiring proper air velocity and (4) such temperature and humidity control which will protect the material from injury in the process of drying.

The Grinnell Wall-Paper and Coated Paper Dryers are of the atmospheric type. The machines were developed to replace the old and antiquated drying racks from which the paper hung in festoons. These racks are often two hundred feet or more in length.

We build our housing right around your present festoon system and utilize the same conveying apparatus taking your paper from the printing, coating or grounding machines. The Grinnell method of air circulation is applied, and we can give you a machine 27 feet in length guaranteed to dry 600 rolls of wall-paper 8 yds. each per hour, thus saving you a tremendous amount of floor space. Our equipment is all built in sections, which can be readily joined together, or to one of our initial installations which have been previously made. The sections are each 6′—8″ long, and by adding two additional sections, for example to the above machine, the output can be increased to 900 rolls per hour. Each section requires ⅜ h. p. for driving its fans, or 1½ h. p. is used for the 600 and 2¼ h. p. for the 900 roll machine. To the above dimension approximately 20 feet must be allowed for aging at the feed and 12 feet allowed for cooling at the discharge end of each dryer. Besides the saving in floor space, there is a tremendous reduction in the drying time. We can also dry sandpaper of different grades, coated paper and similar materials.

Principle of Grinnell Dryer

The fundamental principle in Grinnell Dryers is to complete the drying process by the slow movement of a very large volume of only moderately heated air. Many advantages of low temperature are thus secured with no advance in power or heating costs. The air is moved in a spiral motion by means of fans with special angle blades. These are made entirely of iron and steel, are accurately balanced and have dust proof bearings running in oil. Vibration is eliminated through the use of short fan shafts.

The material travels against the spirally moving air current, which is at a very moderate temperature when entering, and inceases in temperature as it travels from fan to fan. (Each section has its own set of fans, heaters and temperature control.) This gives the greatest heat where the material is most moist and the least, where it is driest. In other words, a special arrangement of fans, baffle plates and heaters, preserves an even continuity of drying. The warm saturated air is exhausted at the end of the machine where the moist material enters.

Usually the air is blown with a spiral motion down over the paper. It is then taken through a port near the floor into the heater chamber located parallel to the drying compartment, but separated from it by means of a galvanized sheet metal baffle plate, then drawn vertically up through the heater and delivered by the next fan into a mixing chamber from which it passes down on to the paper again. Often in a large dryer, we reverse the air direction in the last sections. This is especially true with some classes of wall-paper which are quite wet. The saturated air is finally exhausted at the feed end of the dryer.

The same theory is applied to printed unground paper, ground or coated work only and printed ground work, except that different air velocities, volumes, drying time and temepratures are applied to

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each particular case. And this holds true for both the single and double deck machines, with paper having as high as a twelve color design, or the heaviest coating.

Special Features of Dryer

It is worthy of note that none of our warm saturated air is permitted to escape into the factory, but is exhausted directly from the dryer to outdoors. This makes working conditions far more favorable for your factory employees, making them more efficient.

The heating units may be operated by steam, gas or electricity. The latter is seldom used except where hydro-electric power is available at low rates, or where it is the only means at hand.

Our dryers are all built in sections, so that a single unit may at first be purchased and additions added at a later date. The dryers have rigid pressed steel frames, so designed that they can be dismantled and moved or lengthened out at some future time. Removable panels are inclosed by the framework, and can be removed for cleaning purposes or in case internal parts have to be repaired. They are made of two thicknesses of galvanized sheet steel, having 1″ corrugated air-cell asbestos between, making the most satisfactory insulation for this class of work. All baffle plates are made of galvanized steel of sufficient strength. The entire equipment is absolutely fireproof, meeting with the approval of the Fire Underwriters, and whenever required, our machines are equipped with Grinnell Automatic Sprinklers, ready to connect up to the mill system.

Summary

The Grinnell Dryer as applied to the wall-paper, coated and printed paper industry has proven its worth. Its main advantages over the more antiquated methods of paper drying are an immense saving in floor space and drying time, a finished product of the highest quality, an immense saving in fuel and power and, last but not least, a betterment of working conditions for your mill employees.

"SCOTT" EVAPORATOR AS USED IN THE PULP MILL*

By H. Austin, of Ernest Scott & Co.

One of the most important departments of the modern pulp mill is the recovery house for handling the black spent liquors which come from the digesters. The evaporator, being the section which, in the recovery operation, first receives the weak black spent liquors as produced in the digesters, may therefore well receive first consideration.

Various schemes for taking these liquors and concentrating them to a degree at which they can be reduced to a molten ash in the incinerator have been suggested but their application is limited because they require special conditions, so that it is a well-recognized fact—except where these special conditions apply—that a vacuum evaporator for concentrating the digester spent liquors is a fundamental part of the recovery plant. For instance, the thermo compression system requires an unusually cheap source of power for doing the compression work and if that be not available the cost of compression is more than the cost of fuel for running a vacuum evaporator under ordinary mill conditions; also, to effect the evaporation solely in a direct heat evaporator requires an abnormally high strength digester spent liquor and much stronger than that produced by the ordinary pulp mill. With ordinary pulp mill liquors the carbonaceous matter contained therein is only sufficient to supply the necessary heat units for evaporating a small part of the water in which it is contained and large quantities of fuel wood must be burnt in the incinerator or in the smelting furnace, in order to provide sufficient heat units for evaporating the balance. Better practice, and that now used in most modern pulp mills where normal strength weak spent liquors appertain, is to pass the liquors through a vacuum evaporator and concentrate them to such an extent (usually about 20° Be.) that the direct heat evaporator, through which they are then passed, only has to evaporate such moisture as will enable the incinerating and smelting furnace to operate without the use of fuel wood. In other words, that the heat units from the carbonaceous matter in the concentrated liquor are then themselves sufficient to evaporate the relatively small amount of moisture left in the concentrated liquors.

These conditions make the subject of economical evaporation and recovery of the black liquors always of interest to pulp manufacturers and in the modern sense of the word means vacuum evaporation which uses the principle that water and other liquids boil at reduced temperatures under reduced pressures, thereby enabling the system of multiple effect evaporation to be employed and so permitting the water to be eliminated with a minimum fuel consumption. In multiple effect evaporators the equipment used consists of two or more evaporators in which the steam generated in the evaporating effect is itself used for doing the evaporation in the succeeding evaporator effect. In deciding the number of effects to be used, whether it be double, triple, or quadruple effects, which are the favorite multiples used in this country, fuel consumption must always be an important factor because whether it be in the form of steam, gas, oil or coal, the pulp manufacturer wishes to do his recovery work with a minimum amount of fuel.

Designing the Evaporator

The first essential feature to be considered in designing a multiple effect evaporator is the temperature difference which can be obtained between the temperature of the initial steam which is to be utilized for evaporating purposes and the temperature at which the final concentrated liquid will boil under the vacuum which it is known can be obtained at the location where the pulp mill is situated. These are the primary factors which will decide the number of effects which can be used and yet at the same time secure an adequate commercial return on the plant investment, for that, of course, is always the final factor.

The temperature at which the finally concentrated liquid boils under a known vacuum is a non-variable figure and it therefore becomes the temperature, or pressure, of the initial steam which has to be used in the evaporator which enables the evaporator designer to vary the number of effects in order to obtain the best commercial return from the investment required for installing the evaporators. First of all should be considered whether there is any waste exhaust steam available which can be turned to the evaporation. If there is and there is sufficient of it then a single effect evaporator not only makes the cheapest installation but will also show the best commercial return. If there is insufficient exhaust steam to do the work in a single effect evaporator there may be enough to do the work in a double or triple effect, or it may be that by supplementing the exhaust steam by means of a little live steam direct from the boiler that the amalgamated amount of steam will then be sufficient to do the work in the higher multiple effect rather than ignore the exhaust steam altogether and thus have to furnish live steam for doing the whole of the work in an evaporator using a still higher number of effects, which would involve the expenditure of more money for equipment and, by reason of the work being done solely with live steam, would also involve more expensive operating costs. When using feed liquor having a temperature of about 150° F. in the evaporator in single effect evaporation a little less than one pound of water is evaporated by one pound of steam. In double effect about one and three-quarters pounds of evaporation is obtained per pound of steam, in triple

* Read at the meeting of the Technical Association of the Pulp and Paper Industry at the National Exposition of Chemical Industries, Grand Central Palace, New York, September 11-16, 1922.

XUM

effect about two and five-eighths pounds of evaporation is obtained per pound of steam and in quadruple effect about three and one-half pounds of evaporation is effected per pound of steam. These are conservative figures and depend to some extent on the boiling points of the liquors being handled and the temperature at which they are fed to the evaporator because still greater economies may be obtained by preheating the black liquors which are fed to the evaporator. For this preheating the waste heat gases which pass the rotary and direct heat evaporator may be utilized with advantage.

Utilizing Exhaust Steam

Sufficient attention has not in the past been given to the question of using the exhaust steam for evaporation in mills which require steam both for power and evaporation. The power engineer is usually out to obtain all the power he can by means of expansion engines and condensing the steam and has had no sympathy for the evaporation department. Where, however, the dual operations of engine power and steam for evaporation appertain there is no doubt but that the steam should be taken from the power engine in the shape of exhaust, or low pressure, steam and furnished to the evaporator, because the low pressure steam will give but little return in the shape of power, as for instance if condensed in a condensing engine, but, because the latent heat units are those which are used for evaporating, it has at least ten times the value in heat units in a single effect evaporator and, of course, where two or more effects are used the value of this exhaust, or low pressure, steam for evaporation purposes as compared for power purposes in a condensing engine, is increased in proportion to the figures above stated. This fact is becoming increasingly appreciated and whereas a few years ago it was common practice for mills (which required power from engines and steam for evaporation) to be provided with a condensing engine and to supply the evaporator with direct steam, it is now the practice to have a non-condensing engine which delivers the exhaust to the evaporator and in some cases the non-condensing engine works against quite a little back pressure, as for instance 15-20 pounds. This naturally results in less expensive evaporator equipment (because the number of evaporator effects are usually less under these conditions) and considerably lower mill working costs when the two operations of power and evaporation are considered. Where the amount of power used can be made to balance with the evaporative work, or the number of evaporators in the multiple effect be made to balance the factory engine power, the combined fuel bill can be reduced to one-half compared with what it would be under the old conditions of using a condensing engine for the power and direct steam for working the evaporator.

Multiple Effect Evaporation

It should, moreover, not be assumed that in order to have the greatest general economy that it is necessary to install an evaporator having a high number of multiples. The whole question must be determined on the conditions appertaining at the mill where the evaporator is to be installed. An instance of this came to my notice a short time ago, in which a particular mill requires a large amount of hot water. It also has a fair amount of exhaust steam and the plant used is a triple effect, which, instead of utilizing the maximum vacuum obtainable on the last effect, works only with about 20″ on the third effect so as to obtain the effluent water from the vacuum pump as hot as possible. It comes away from the pump at 160° F., which is the temperature at which hot water is required in other parts of the factory, though a large portion of it is also pumped through economizers for boiler feed purposes. That was the most economical method for that particular mill and reduced the aggregate fuel bill by 11 per cent as compared with the results formerly obtained by a quadruple effect working under the same steam conditions as the triple effect but with a higher vacuum, which resulted in cooler pump effluent water and thereby made more fuel necessary for furnishing other points in the mill with the hot water that was required.

It has recently been suggested that seeing that multiple effect evaporation is dependent upon temperature difference why not use the weak liquor in the last effect and have the concentrated liquor come from evaporator to evaporator to meet the hotter steam so that the most concentrated liquor would be in the first effect which receives the hottest steam. The thought is that the more concentrated liquor has the higher boiling point and will, therefore, provide vapor of hotter temperature for evaporating, in the succeeding effects, the liquor having the lower boiling point and by this means to secure a greater economy. If fuel economy only is to be considered the idea is perfectly correct, but an evaporation problem is not only one of fuel economy but is also one where volume of evaporation per square foot of heating surface enters into the question in order to keep the size of the evaporator within such limits that a reasonable return on capital investment will be obtained. Take for instance a caustic soda liquor, which, in its weak state will evaporate at the rate of at least five pounds of water per square foot of heating surface per hour, but which when concentrated will evaporate at less than half that rate. It will be seen that if the more concentrated liquor is used in the first effect even though the evaporated vapor may have a few more heat units in it yet there will be so little volume of it per square foot of heating surface, that the evaporation of the weaker liquors in the succeeding effects will be very much retarded and the apparatus as a whole require to be of much larger size than if the weak liquor be used in the first effect and the stronger liquor in the later effects, as is the usual practice. The point is, that in order to get the maximum amount of work out of a given size of multiple effect evaporator one must not only have temperature difference but also volume of evaporation must be effected and the present system of using weak liquor in the first effect where the hottest steam is used results in the greater volume of evaporation per square foot of heating surface and therefore the smallest possible size of evaporator being required, and, consequently the lowest cost of installation so that the net return, which after all is the point being striven for, is greatest by the present method.

Improvements in Design

Up to a few years ago the type of evaporator in general use in this country was that using the heating tubes horizontally with the liquor outside the tubes and the steam inside. Such machines froth badly with foamy liquors and gather a scale on the tubes which is extremely difficult to remove, so that the Scott Company in supplying black liquor recovery plant—consisting of Rotary Incinerator and Causticizing equipment—were called upon to design and construct an evaporator which overcame the troubles encountered with the horizontal tube machine and so developed their vertical tube evaporator. This machine uses the liquor inside the tubes and steam outside and the results are so satisfactory that it is now extensively used both by pulp mills in this country and abroad. As a consequence of the principles on which this evaporator is designed it has marked freedom from frothing troubles and tube incrustation difficulties. The satisfaction thus obtained has resulted in most makers of evaporators offering vertical tube machines, but differing from the "Scott" machine in one important respect—the circulating tube area. In the "Scott" evaporator the heating, or downtake, area is distributed over the whole area of the evaporator, whereas other types use one large downtake situated in the center of the area of the evaporator, or else at one side of the machine. Now it is obvious that the liquor which has to be evaporated has to pass up the heating or uptake tubes before it can travel down the downtake area and by locating the downtake tube in the center, or alternatively to one side of the area of the evaporator, the liquors which come up the uptakes furthest away from the downtakes have also to travel over the liquors which

XUM

come from the uptakes which are nearer the downtake and in doing so are thereby baffled and hindered in their progress to the downtake with the result that there is very little circulation between the uptakes furthest away from the downtake and the evaporator boils with a rolling action. In the "Scott" machine the circulation of each nest of uptake, or heating, tubes is taken care of by its own downtake tube and the "Scott" evaporator boils in an entirely different manner by reason of the improved and regular, even circulation obtained.

The "Scott" Evaporator

In the "Scott" evaporator one obtains all the advantages of both the full, or submerged tube, type of evaporator as well as those of the "film" tube type of machine without the disadvantages of either. When starting to work the liquor is fed into the evaporator until it barely covers the top tube sheet. Then as the more heated liquor must rise to the top there is a movement upwards through the tubes and the liquor rises first in the smaller or uptake tubes, because as the volume of the liquor in same is so much less in proportion to that in the larger tubes it heats more quickly in the smaller, or uptake tubes. This movement is assisted by the formation of vapor formed from the evaporated moisture and that vapor, being lighter than the liquid from which it has been evaporated, rises in the tube and accumulates until its volume is such that it can carry the piston of liquid, which is in the tube above it, through the tube so that the liquid is impelled upwards in front of the vapor. During the interval that the vapor is passing upwards through the tube it is, of course, enveloped in a film, or envelope, of liquid which is itself nearer the heating surface than the evaporated vapor and thus results in a "film" effect evaporation being momentarily obtained while the vapor, with its envelope of liquor, is passing through the tube to the vapor separation space. The movement of the liquor through the tubes brakes up any natural tendency that the liquor may have to froth or foam, and, moreover, acts as a scouring agent to keep the tubes clean. Ample space in the top of the evaporator is provided for the separation of the vapor from the liquid. The vapor is, of course, many times the volume of the water from which it has been evaporated. The vapor passes off through the vapor outlet and the liquid passes to the downtake. In this way a very vigorous and true circulation of the liquor is obtained in the "Scott" evaporator without mechanical means.

Efficiency of the "Scott" Machine

From the fact that in the "Scott" evaporator the steam is used outside the tubes and the liquid which is to be evaporated is inside the tubes, it will be appreciated that the tubes are really immersed in a bath of steam so that as fast as the steam is used up more steam flows to the heating surface. In this way the heating surface is, therefore, in the best possible condition to do the maximum amount of work and to get a full supply of steam, which is a very different condition to that appertaining in evaporators, whether they be vertical or horizontal tubes, which use the steam inside the tubes because in that case—particularly when the liquors to be evaporated are cold and weak—the steam is frequently used up long before it reaches the end of the tube and in that event only part of the heating surface can be utilized. In the "Scott" machine, owing to the fact that the liquid to be evaporated is used inside the tubes, the latter can be easily brushed out and cleaned, whereas in machines where the steam is used inside the tubes and the liquid outside, any coating or deposit from the liquors is on the outside of the tubes and is not so easily gotten rid of.

In the case of tube replacement and renewal it is not necessary to dismantle the "Scott" machine but access to the tubes is obtained by the removal of two manhole covers, one below and one above the ends of the tubes, so that the replacement of any tube can be quickly performed.

Paper Firms at Direct Mail Ad. Convention

[FROM OUR REGULAR CORRESPONDENT]

CINCINNATI, Ohio, September 12, 1922.—Among the many features that will be seen at the forthcoming convention of the Direct Mail Advertising Association, to be held in Cincinnati, October 25 to 27, 1922, one of the most interesting and attractive will be the exhibits and demonstrations in the "Paper Colony." Many manufacturers and distributors of fine paper stock have already secured space.

The Seaman-Patrick Paper Company, Detroit, in conjunction with the Seaman Paper Company, Chicago, will have a very novel and unique display. A special-built booth will house their particular display and elaborate illuminating effects will be brought into play. The booth is to reproduce a room done in sixteenth century style, the fences to be built of beaver board and lined with a special fancy cover stock the Seaman companies are marketing.

The Hampshire Paper Company, South Hadley Falls, Mass., is planning to put on the best exhibit that has ever been known in the history of its organization. It has announced that a little vestpocket booklet, which won a prize for unique advertising at a previous D. M. A. A. convention, will be distributed to visitors at their exhibit in Cincinnati.

Probably one of the most expensive and most attractive exhibits will be that of the American Writing Paper Company, which company is planning to send a whole car of display material several hundred miles to this exposition. This includes the "baby" Fourdrinier paper machine, which tips the scale at 500 pounds and only takes up the room of two library tables set lengthwise. Among other features of the exhibit will be actual demonstrations of every process of manufacture, such as sorting, boiling, bleaching and washing rags, parting the stock for the paper machine, sizing the paper to assure the proper printing surfaces, imprinting the watermark, drying the paper both on the machine and in the rough, application of "finishes," sorting, inspecting and packing the finished stock. There will also be a complete chemical laboratory as fully equipped as any paper laboratory in the world.

Every method of analyzing paper will be shown and carefully explained by chemists and expert paper makers from the company's mills at Holyoke.

Other paper manufacturers or distributors who have taken space, but who have not as yet disclosed the special features that will be included in their exhibits are the Dill & Collins Company, Philadelphia, Pa.; Beckett Paper Company, Hamilton, Ohio; Diem & Wing Paper Company, Cincinnati, Ohio; Miami Paper Company, West Carrollton, Ohio; Paper Makers' Club, Holyoke, Mass.; Strathmore Paper Company, Mittineague, Mass.; Whitaker Paper Company, Cincinnati, Ohio; Standard Paper Company, Cincinnati, Ohio; S. D. Warren Company, Boston, Mass., and Chatfield & Woods Paper Company, Cincinnati, Ohio.

Conditions in Pulp and Paper Industry

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 13, 1922.—The Department of Commerce has the following to say regarding paper and pulp industry in discussing fundamental business conditions:

"The production of news print declined about 5 per cent in July. Shipment from the mills and consumption by publishers each declined in about the same proportion as production. Stocks increased, particularly those in the hands of and in transit to publishers. The same was true of the production, shipments and consumption and stocks of wood pulp, both mechanical and chemical.

"The production of material for paper-box containers, both corrugated and solid fiber board, showed marked increases during the month of July.

This industry indicated the highest rate of activity for any month since the fall of 1920."

XUM

Imports and Exports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING SEPTEMBER 9, 1922

SUMMARY

Printing paper.....74 rolls, 109 cs.
Wrapping paper.....2,471 bls., 3,132 cs.
Blotting paper .....105 bls.
Cigarette paper .....710 cs.
Wall paper.....2,225 rolls, 7 cs., 4 bls.
Hangings .....16 bls.
Filter paper .....54 cs., 25 bls.
Tissue paper .....14 cs.
Packing paper.....1,074 rolls, 22 cs., 93 bls.
Glass paper .....23 cs.
Surface coated paper.....43 cs.
Photo paper .....12 cs.
Blue print paper.....38 rolls
Drawing paper .....64 cs.
Tracing paper .....12 cs.
Miscellaneous paper.....34 cs., 392 bls., 271 rolls

CIGARETTE PAPER

American Tobacco Company, Niagara, Bordeaux, 600 cs.
British-American Tobacco Company, Cedric, Liverpool, 24 cs.
British-American Tobacco Company, Laconia, Liverpool, 30 cs.
British-American Tobacco Company, Carmania, Liverpool, 5 cs.
British-American Tobacco Company, Adriatic, Liverpool, 5 cs.
Rose & Frank, La Touraine, Havre, 46 cs.

WALL PAPER

Wrigley & Co., Berengaria, Liverpool, 4 cs.
W. H. S. Lloyd & Co., Dakarian, London, 4 bls., 3 cs.
F. G. Prager Company, Finland, Antwerp, 2,225 rolls.

PAPER HANGINGS

A. C. Dodman, Jr., Company, Cedric, Liverpool, 13 bls.
A. C. Dodman, Jr., Company, Adriatic, Liverpool, 3 bls.

FILTER PAPER

Scientific Materials Company, President Roosevelt, Bremen, 1 case.
J. Manheimer & Co., La Touraine, Havre, 53 cs.
A. Giese & Son, Niagara, Bordeaux, 25 bls.

TISSUE PAPER

Meadows, Wye & Co., Carmania, Liverpool, 5 cs.
C. A. Wyman Company, by same, 4 cs.
N. Schuetz & Co., M. Dollar, Genoa, 5 cs.

PACKING PAPER

Wilkinson Brothers & Co., Inc., Vandyck, Hamburg, 93 bls.
National Electric Conduit Company, Saxonia, Hamburg, 22 cs.
Republic Bag & Paper Company, Morristown, Hamburg, 1,074 rolls.

WRAPPING PAPER

First National Bank of Boston, Morristown, Hamburg, 473 bls.
Wilkinson Brothers & Co., Inc., Schodack, Rotterdam, 89 bls.
First National Bank of Boston, Manchuria, Hamburg, 1,185 bls., 817 rolls.
L. Gleckman & Co., Fred. VIII, Copenhagen, 1,007 rolls
Fernstrom Paper Company, Inc., Fred. VIII, Trondhjem, 20 rolls.
E. C. Melby, by same, 214 rolls.
First National Bank of Boston, Saxonia, Hamburg, 1,074 rolls, 1,724 bls.

BLOTTING PAPER

Somlo Company, Orbita, Hamburg, 105 bls.

PRINTING PAPER

E. C. Melby, Fred. VIII, Kristiania, 74 rolls.
P. C. Zuhlke, Finland, Antwerp, 12 cs.
B. F. Drakenfeld & Co., Laconia, Liverpool, 10 cs.
B. F. Drakenfeld & Co., Carmania, Liverpool, 32 cs.
Oxford University Press, by same, 6 cs.
Oxford University Press, Adriatic, Liverpool, 6 cs.
W. F. Ethrington Company, Assyria, Glasgow, 43 cs.

GLASS PAPER

J. L. N. Smythe Company, Mt. Clinton, Hamburg, 8 cs.
J. L. N. Smythe Company, Morristown, Hamburg, 15 cs.

SURFACE COATED PAPER

P. C. Zuhlke, Finland, Antwerp, 43 cs.

PHOTO PAPER

Geneart Company of America, Finland, Antwerp, 12 cs.

BLUE PRINT PAPER

Keuffel & Esser, Rugia, Hamburg, 38 rolls.

DRAWING PAPER

Keuffel & Esser, Rugia, Hamburg, 33 cs.
American Shipping Company, Manchuria, Hamburg, 31 cs.

TRACING PAPER

E. Dietzgen & Co., Manchuria, Hamburg, 12 cs.

PAPER

M. G. Lange & Co., President Roosevelt, Bremen, 23 cs.
Atlantic Forwarding Company, La Touraine, Havre, 3 cs.
Roberts, Cushman & Co., Taormina, Genoa, 3 cs.
National City Bank, Orleita, Hamburg, 130 rolls.
Becker Paper Company, Africanic, Gothenburg, 385 bls.
Republic Bag and Paper Company, by same, 258 rolls.
D. V. Arguimban, La Savoie, Havre, 7 bls.
Whiting & Patterson, by same, 5 cs.

RAGS, BAGGINGS, ETC.

L. H. Abenheimer, Archimedes, Manchester, 198 bls. baggings.
R. F. Downing & Co., by same, 125 bls. new cuttings.
Royal Manufacturing Company, by same, 370 bls. cotton waste.
Castle, Gottheil & Overton, by same, 188 bls. new cuttings.
Equitable Trust Company, by same, 110 bls. rags, 602 bls. paper stock.
E. J. Keller Company, Inc., Argus, Antwerp, 43 bls. rags.
E. J. Keller Company, Inc., Vandyk, Algiers, 373 bls. rags.
E. J. Keller Company, Inc., La Touraine, Havre, 116 bls. baggings.
Castle, Gottheil & Overton, La Touraine, Rouen, 109 bls. baggings, 4 bls. rags.
Equitable Trust Company, La Touraine, Havre, 485 bls. rags.
Castle, Gottheil & Overton, Bankdale, Barcelona, 181 bls. rags.
Castle, Gottheil & Overton, Silewe, Marseilles, 115 bls. new cuttings.
Katzenstein & Keene, Inc., President Polk, London, 36 bls. new cuttings, 199 bls. rags.
D. M. Hicks, Inc., Dakarian, London, 44 bls. waste paper.
International Acceptance Bank, Reliance, Hamburg, 20 bls. rags.
Goldman, Sachs & Co., by same, 36 bls. rags.
Waste Materials Trading Corp., Vechtdyk, Rotterdam, 132 bls. shopperies.
Waste Materials Trading Corp., by same, 213 bls. bagging.
American Woodpulp Corp., by same, 241 bls. rags.
E. J. Keller Co., Inc., by same, 491 bls. rags.
G. W. Millar & Co., by same, 88 bls. bagging.
Dexcar Trading Co., Wells City, Bristol, 581 bls. rags.
International Purchasing Co., Hudson, Havre, 21 bls. rags.
Chase National Bank, by same, 37 bls. rags.
Castle, Gottheil & Overton, by same, 113 bls. rags.
Equitable Trust Co., by same, 201 bls. rags.
E. Butterworth & Co., Inc., Westerdyk, Rotterdam, 120 bls. paper stock.
Royal Mfg. Co, by same, 34 bls. cotton waste.
Salomon Bros. & Co., Francisco, Hull, 37 bls. rags.
Mechanic & Metals National Bank, Verentia, London, 179 bls. rags.
Castle, Gottheil & Overton, by same, 80 bls. waste paper.
M. Wolfer, Calamares, Havana, 10 bls. rags.
American Woodpulp Corp., Schodack, Rotterdam, 305 bls. rags.
Castle, Gottheil & Overton, Morristown, Hamburg, 35 bls. rags.
National City Bank, by same, 99 bls. rags.
State Bank, by same, 218 bls. rags.
International Acceptance Bank, by same, 43 bls. rags.
Katzenstein & Keene, by same, 727 bls. rags.
Goldman, Sachs & Co., by same, 105 bls. rags.
Irving National Bank, by same, 15 bls. rags.
E. J. Keller Co., Inc., Morristown, Hamburg, 91 bls., baggings.
Chase National Bank, by same, 67 bls. rags.
Ladenburg, Thalman & Co., by same, 51 bls. rags.
L. H. Abenheimer, by same, 569 bls. rags.
F. P. Gaskell, by same, 4 bls. new cuttings.
Baring Bros. & Co., Laconia, Liverpool, 142 bls. thread waste.
Albion Trading Co., Pres. Garfield, London, 40 bls. rags.
American Express Co., by same, 28 bls. rags.
Katzenstein & Keene, Inc., Pioneer, Havre, 258 bls. rags.
Baring Bros. & Co., Cedric, Liverpool, 19 bls. thread waste.
Equitable Trust Co., by same, 112 bls. paper stock.
E. J. Keller Co., Inc., Mt. Clinton, Hamburg, 80 bls. rags.
Goldman, Sachs & Co., by same, 110 bls. rags.
Castle, Gottheil & Overton, by same, 146 bls. rags.
Castle, Gottheil & Overton, Imoke, Antwerp, 350 bls. baggings.
M. O'Meara Co., by same, 121 bls. baggings.
W. Barnet & Son, by same, 108 bls. rags.
E. J. Keller Co., Inc., by same, 41 bls. rags.
Castle, Gottheil & Overton, Niagara, Bordeaux, 76 bls. rags.
Castle, Gottheil & Overton, by same, 96 bls. new cuttings.
First National Bank of Boston, by same, 28 bls. rags.
Albion Trading Co., by same, 59 bls. rags.
W. Scholl & Co., by same, 602 bls. rags.
Albion Trading Co., Adriatic, Liverpool, 71 bls. rogs.
G. M. Granes Co., Inc., by same, 113 bls. baggings.
Castle, Gottheil & Overton, La Lorraine, Havre, 247 bls. rags.
P. Berlowitz, New Amsterdam, Rotterdam, 99 bls. rags.
American Woodpulp Corp., by same, 17 bls. baggings.
American Woodpulp Corp., by same, 276 bls. rags.
Royal Manufacturing Co., by same, 45 bls. cotton waste.
E. J. Keller Co., Inc., by same, 89 bls. rags.

OLD ROPE

International Purchasing Co., Argentina, Algiers, 109 coils.
Chemical National Bank, Pres. Roosevelt, Bremen, 73 bls.
Brown Bros. & Co., Vechtdyk, Rotterdam, 73 coils.
Brown Bros. & Co., Wells City, Bristol, 261 coils.
Brown Bros. & Co., Francisco, Hull, 414 coils.
E. J. Keller Co., Inc., by same, 125 coils.
S. Cohen, Calamares, Havana, 3 bls.
Brown Bros. & Co., Schodack, Rotterdam, 87 coils.
F. P. Gaskell, Manchuria, Hamburg, 10 bls.
M. Wolfer, Pastores, Havana, 4 bls.
R. Serucruino, Sanca, Santiago, 12 bls.

CHINA CLAY

English China Clay Sales Corp., Wells City, Bristol, 100 casks.

CASEIN

National City Bank, Canadian Seigneur, Melbourne, 4,000 bags.
Atterbury Bros., Southern Cross, Buenos Aires, 167 bags.
Kalbfleisch Corp., by same, 1,384 bags.
A. Klipstein & Co., La Lorraine, Havre, 50 bags.

WOOD FLOUR

A. Kramer & Co., Inc., Orduna, Hamburg, 250 bags.
A. Kramer & Co., Inc., Orluta, Hamburg, 249 bags.

WOOD PULP

H. Hollesen, Inc., Pres. Roosevelt, Bremen, 2,324 bls., 464 tons.
M. Gottesman & Co., Inc., Orluta, Hamburg, 771 bls.
Seggerman Bros., Fred. VIII, Gothenburg, 200 bls., 25 tons.
Brown Bros. & Co., Inc., Africanic, Gothenburg, 2,750 bls., 556 tons.
Scandinavian-American Trading Co., by same, 180 bls., 30 tons.
E. M. Sergeant & Co., by same, 600 bls., 100 tons.
A. J. Page, Inc., by same, 1,800 bls., 300 tons.

(*Continued on page 72*)

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New York Market Review

OFFICE OF THE PAPER TRADE JOURNAL,
WEDNESDAY, SEPTEMBER 13, 1922.

After a five months' strike, more than 100,000 anthracite workers resumed work Monday of this week. The first train load of coal mined in 163 days started on its journey Monday night from the big Truesdale mine at Nanticoke, Pa. The coal strike has been broken at last.

Last minute press dispatches state that the shop strike on 52 roads is likely to end this week. If this truce is consummated it will mean that the first step has been taken toward a nation-wide return to work. It would mean a cessation of the rail tieup.

With these two fundamental obstacles cleared away, paper manufacturers may well look forward to a long period of clear sailing. Economic conditions are such as to warrant an almost unprecedented volume of business this fall and winter. The demand for paper is ever increasing from all quarters and this is accompanied by substantial price increases. The boom in the paper industry has merely been retarded by the national strikes.

The substantial activity in practically every line of business, accompanied by a strengthening in the primary markets has given rise to an enormous volume of advertising with a consequent enhancement in the consumption of all grades of paper. Manufacturers in a few lines have withdrawn quotations owing to the hazardous fuel and transportation conditions, but now that these impediments to normal progress are rapidly disappearing, paper prices will, undoubtedly, settle at a firm level that will admit of a fair profit to all connected with the industry.

To be convinced of the enormous increase in the consumption of news print paper it is only necessary to examine the current editions of the New York dailies. Advertisers are filling column after column and page after page with descriptions of their products in confident anticipation of the business boom that will come this fall. The consumption of news print paper in the United States is now going on at the rate of 2,200,000 tons per year—the highest ever known in the history of the industry. The market is strengthening each week. New orders for contract shipment are being taken by several of the larger producers at $80 per ton, and prices are expected to go above this during the last quarter of this year.

In book paper circles, although prices continue withdrawn, an enormous demand still prevails. Not only is the circulation of nearly every magazine and periodical in the country constantly increasing, but publishers are printing more advertising and text matter. The sale of hundreds of thousands of school books over the country with the reopening of school has, in itself, made a considerable dent in the stocks of booksellers. Export demand for book paper continues on the rise and both merchants and manufacturers are looking forward to the best season the business has enjoyed in years.

Fine paper quotations are still being made on a daily basis and most manufacturers have canceled all existing price lists or weekly quotation sheets owing to the unsettled conditions which have centered around the coal and rail situations. Mills are, however, deluged with orders, and manufacturers are not inclined to believe this is due to an artificial strike demand. Consumers of writing paper are already negotiating for their holiday supplies, and the prospects are that the remaining fall and winter months should be characterized by a goodly volume of business in this field.

Probably more than any branch of the industry, the tissue trade is suffering from the effects of the coal shortage. New York clothing houses are clamoring for tissue stocks to tide them over their fall business, but dealers, who, for the most part failed to stock up in time, are unable to meet their customers' demands. Tissue mills are running as close to capacity as their fuel supplies will let them, but with the announcement of a coal settlement this branch of the industry is expected to get squarely on its feet in the near future.

The rising cost of raw materials is causing many wrapping paper manufacturers to take orders contingent upon their ability to produce. Kraft wrappings are exceedingly active and a healthy volume of business attaches to most of the other grades. The general tone of the market is strengthening and prices are going up almost inevitably due to the combination of a top-heavy demand, scanty available stocks, high-priced raw materials and the coal and rail tieups.

Board manufacturers, the first to withdraw price quotations, are still quoting day-by-day. The demand for all kinds of board is only equalled by that which followed close on the heels of the war. The *Harvard Economic Service*, of September 9, states that general business conditions favor advances in paper board prices. In that light, the current advances, under cover of price withdrawals, are not precipitated merely by the industrial tieups, although these factors have, undoubtedly, a large influence.

Mechanical Pulp

Ground wood prices have not altered during the past week, but dealers feel that substantial price increases will take place in the near future, corresponding with the boosts which have occurred in practically every phase of the paper business. Activity has been regular and the demands from news print mills have been exceptionally heavy. With the consummation of the coal and rail strikes, mechanical pulp producers feel that a steady volume of business at profitable prices should accrue to them.

Chemical Pulp

The chemical pulp market is decidedly firm and a perceptible stiffening has been taking place among the lower grades. Regular quantities of bleached sulphite have been moving into consuming channels and the demand for nearly all grades has continued on the increase. In a few cases upward price revisions were noted during the past week.

Old Rope and Bagging

No price increase was noted in the old rope market of the past week although there has been a substantial picking up in demand. No. 1 domestic manila rope has been in good demand at prices up to 6.25, f. o. b. New York, while the demand for the different grades of old strings has eased up a bit during the week. Scrap bagging has been easy, roofing bagging being practically the only bright spot in this market. Roofing is still holding in the neighborhood of 90c to $1.00 per hundred pounds and roofing felt mills are taking all they can get at this figure.

Waste Paper

Waste paper is still moving at a tremendous rate, and prices even higher than those already reached are expected within the next week or two. It appears as though the very volume of business which is accruing to mills is sufficient in itself to warrant their paying the exceptionally high prices for waste paper. The demand for raw materials is on the increase, and the board industry, especially, is requiring steady quantities of such grades as waste news and mixed paper.

Rags

All grades of rags have continued in active demand and prices have been strengthening week by week. The market is in a decidedly firm condition. Roofing felt manufacturers have contracted with importers for their advance shipments, but the drastic price advances abroad have tended to slow down the purchase of foreign rags. New cotton cuttings have been in steady, heavy demand and packers deny the existence of any spot accumulations.

Twine

The past week in the twine market has been marked by steady prices and a demand which is ever strengthening. The low stocks in the hands of dealers are expected to be wiped out within the next week or two and a subsequent era of stocking up follow at considerably higher prices due to the raw material increases.

XUM

Market Quotations

Paper Company Securities

New York Stock Exchange closing quotations September 12, 1922:

	BID.	ASKED
American Writing Paper Company, pref.	32½	32¾
International Paper Company, ocm.	61¼	61½
International Paper Company, pref., stamped	79½	80¼
Union Bag & Paper Corporation	77¼	77¾

Paper

F. o. b. Mill.

Ledgers, Bonds, Writings— Extra Superfine, Superfine, Tub Sized, Engine Sized	All quotations withdrawn		
News—f. o. b. Mill—			
Rolls, contract	3.75	@	4.00
Rolls, transit	4.00	@	—
Sheets	4.00	@	—
Side Runs	3.25	@	3.50
Book, Cased—f. o. b. Mill S. & S. C., M. F., Coated and Enamel, Lithograph	All quotations withdrawn		
Tissues—f. o. b. Mill White, No. 1, Colored, Anti-Tarnish, Silver Tissue, Manila	All quotations withdrawn		
Kraft—f. o. b. Mill—			
No. 1 Domestic	7.00	@	7.50
No. 2 Domestic	5.50	@	6.25
Imported	6.00	@	6.25
Screenings	2.75	@	3.50
Manila—			
No. 1 Jute	8.50	@	9.00
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.50	@	5.50
No. 2 Wood	4.00	@	4.50
Butchers	4.25	@	4.75
Fiber Papers—			
No. 1 Fiber	6.00	@	6.25
No. 2 Fiber	5.00	@	5.25
Common Bogus	2.50	@	—
Card Middies	4.00	@	5.00
Boards—per ton— News, Straw, Chip, Binders' Board, Sgl. Mla. LL.Chip, Wood Pulp, Container	All quotations withdrawn		
Wax Paper— Self Sealing White 28 and 30 lb. basis	10.00	@	11.00
Waxed Tissue	1.40	@	1.60
Glassine— Bleached, basis 25 lbs., Bleached, basis 20 lbs.	All quotations withdrawn		

Mechanical Pulp

(Ex-Dock.)

No. 1 Imported	32.00	@	36.00
No. 1 Domestic	28.00	@	32.00

(F. o. b. Pulp Mills.)

Chemical Pulp

(Ex-Dock, Atlantic Ports.)

Sulphite (Imported)—			
Bleached	4.30	@	4.50
Easy Bleaching	2.85	@	3.10
No. 1 strong unbleached	2.50	@	2.75
No. 2 Strong unbleached	2.25	@	2.50
No. 1 Kraft	2.70	@	3.00
Sulphate—			
Bleached	3.90	@	4.00

(F. o. b. Pulp Mill.)

Sulphite (Domestic)—			
Bleached	4.25	@	4.50
Strong unbl'chd.	2.60	@	2.80
Easy Bleaching Sulphite	2.70	@	3.10
News Sulphite	2.50	@	2.80
Mitscherlich	2.75	@	3.05
Kraft (Domestic)	2.65	@	3.00
Soda Bleached	4.00	@	4.50

Domestic Rags

New

Prices to Mill, f. o. b. N. Y.

Shirt Cuttings—			
New White, No. 1	11.25	@	11.75
New White, No. 2	6.50	@	7.00
Silesias, No. 1	6.25	@	6.75
New Unbleached	9.00	@	9.50
Washables	4.00	@	4.25
Fancy	5.00	@	5.50
Cotton—according to Grades—			
Blue Overall	6.00	@	6.25
New Blue	4.75	@	5.00
New Black Soft	5.50	@	6.00
New Light Seconds	2.75	@	3.00
O. D. Khaki Cuttings	3.75	@	4.25
Men's Corduroy	2.75	@	3.00
New Canvas	7.00	@	7.25
New Black Mixed	2.50	@	2.75
Old White, No. 1—			
Repacked	6.50	@	6.75
Miscellaneous	5.50	@	6.00
White, No. 2—			
Repacked	3.25	@	3.50
Miscellaneous	2.75	@	3.00
St. Soiled White	1.65	@	1.75
Thirds and Blues—			
Repacked	1.75	@	1.85
Miscellaneous	1.45	@	1.55
Black stockings	2.90	@	3.25
Roofing Rags—			
Cloth Strippings	1.25	@	1.35
No. 1	1.25	@	1.35
No. 2	1.20	@	1.25
No. 3	.85	@	.95
No. 4	.85	@	.95
No. 5A	1.00	@	1.10

Foreign Rags

New Light Silesias	6.00	nominal
Light Flannelettes	6.75	nominal
Unbl'chd Cottons	7.50	nominal
New White Cuttings	9.50	nominal
New Light Oxfords	6.00	nominal
New Light Prints	4.50	nominal
New Mixed Cuttings	2.00 @	2.50
New Dark Cuttings	1.90 @	2.10
No. 1 White Linens	9.00 @	11.00
No. 2 White Linens	6.50	nominal
No. 3 White Linens	5.00	nominal
No. 4 White Linens	3.50	nominal
Old Extra Light Prints	2.00	nominal
Ord. Light Prints	1.75	nominal
Med. Light Prints	1.50	nominal
Dutch Blue Cottons	1.85	nominal
German Blue Cottons	1.50	nominal
Ger. Blue Linens	3.50	nominal
Checks and Blues	1.50	nominal
Dark Cottons	1.20 @	1.30
Shoppery	1.00 @	1.05
French Blues	1.75 @	2.00

Bagging

Prices to Mill f. o. b. N. Y.

Gunny No. 1—			
Foreign	1.00	@	1.10
Domestic	1.00	@	1.10
Wool, Tares, light	1.45	@	1.55
Bright Bagging	1.10	@	1.25
No. 1 Scrap	1.00	@	1.15
Sound Bagging	.85	@	.95
Manila Rope—			
Foreign	5.75	@	6.25
Domestic	6.25	@	6.50
New Bu. Cut	2.25	@	2.45
Hessian Jute Threads—			
Foreign	2.25	@	2.50
Domestic	2.20	@	2.40
Mixed Strings	.90	@	1.00

Twines

Cotton—(F. o. b. Mill)			
No. 1	.35	@	.37
No. 2	.31	@	.33
No. 3	.27	@	.29
India, No. 6 basis—			
Light	.20	@	.21
Dark	.19	@	.20
B. C., 18 Basis	.41	@	.42
A. B. Italian, 18 Basis	.51	@	.61
Finished Jute—			
Light, 18 basis	.26	@	.27
Dark, 18 basis	.29	@	.30
Jute Wrapping, 3-6 Ply—			
No. 1	.23	@	.24
No. 2	.21	@	.22
Tube Rope—			
4-ply and larger	.15	@	.17
Fine Tube Yarn—			
5-ply and larger	.19	@	.21
4-ply	.20	@	.22
3-ply	.20	@	.22
Unfinished India— Basis	.16	@	.17
Paper Makers Twine Balls	.13	@	.15
Box Twine, 2-3 ply	.18	@	.19
Jute Rope	.21	@	.24
Amer. Hemp, 6	.33	@	.35
Sisal Hay Rope—			
No. 1 Basis	.15	@	.17
No. 2 Basis	.13	@	.15
Sisal Lath Yarn—			
No. 1	.14	@	.15
No. 2	.11	@	.13
Manila Rope	.18	@	.19

Old Waste Papers

(F. o. b. New York)

Shavings—			
Hard, White, No. 1	4.00	@	4.25
Hard, White, No. 2	3.65	@	3.90
Soft, White, No. 1	3.60	@	3.80
Flat Stock—			
Stitchless	2.00	@	2.15
Over Issue Mag.	2.60	@	2.70
Solid Flat Book	1.85	@	2.00
Crumpled No. 1	1.70	@	2.00
Solid Book Ledger	2.70	@	2.85
Ledger Stock	1.90	@	2.00
New B. B. Chips	.65	@	.70
Manilas—			
New Env. Cut	2.50	@	2.75
New Cut No. 1	1.90	@	2.00
Extra No. 1, Old	1.55	@	1.65
Print	1.05	@	1.15
Container Board	.90	@	1.10
Bogus Wrapper	1.05	@	1.15
Old Krafts, machine compressed Bales	1.85	@	1.95
News—			
No. 1 White News	1.80	@	1.95
Strictly Overissue	1.20	@	1.30
Strictly Folded	1.10	@	1.15
No. 1 Mixed Paper	.90	@	.95
Common Paper	.55	@	.60

CHICAGO

[FROM OUR REGULAR CORRESPONDENT.]

Paper

F. o. b. Mill

All Rag Bond, No. 1 Rag Bond, No. 2 Rag Bond, Water Marked Sulphite, Sulphite Bond, Sulphite Ledger, Superfine Writing, No. 1 Fine Writing, No. 2 Fine Writing, No. 3 Fine Writing, No. 1 M. F. Book, No. 1 S. & S. C. Book, Coated Book, Coated Label	All quotations withdrawn		
News—Rolls, mill	3½	@	4½
News—Sheets, mill	3¼	@	4¼
No. 1 Manila	5½	@	6
No. 1 Fiber	5	@	5½
No. 2 Manila	4½	@	5
Butchers' Manila	4	@	—
No. 1 Kraft	7	@	7½
No. 2 Kraft	6	@	6½
Wood Tag Boards	4	@	—
Screenings	2½	@	—
Boards, per ton— Plain Chip, Solid News, Manila Lined Chip, Container Line— 85 Test, 100 Test	All quotations withdrawn		

Old Papers

Shavings—			
No. 1 Hard White	4.50	@	4.75
No. 1 Soft Shav.	3.75	@	4.00
No. 1 Mixed	2.10	@	2.20
No. 2 Mixed	1.75	@	1.90
White Envel. Cuttings	4.50	@	4.75
Ledgers and Writings	2.65	@	2.75
Solid Books	2.55	@	2.65
No. 1 Books, light	2.40	@	2.50
Blanks	2.00	@	2.25
Ex. No. 1 Manila	2.40	@	2.60
Manila Envelope Cuttings	2.40	@	2.60
No. 1 Manilas	1.75	@	2.00
Folders News (over issue)	1.40	@	1.50
Old Newspaper	1.35	@	1.45
Mixed Papers	1.25	@	1.50
Straw Clippings	1.25	@	1.50
Binders Clippings	1.25	@	1.50
Kraft	2.40	@	2.60
New Kraft Cuts	2.50	@	2.75

Roofing Stock, f.o.b. Chicago, Net Cash—

No. 1	33.00	@	—
No. 2	31.00	@	—
No. 3	29.00	@	—
No. 4	29.00	@	—

PHILADELPHIA

[FROM OUR REGULAR CORRESPONDENT.]

Paper

Bonds	.10	@	.60
Ledgers	.15	@	.40
Writings—			
Superfine	.15	@	.20
Extra fine	.12	@	.22
Fine	.20	@	.30
Fine, No. 2	.20	@	.25
Fine, No. 3	.15	@	.20
Book, M. F.	.06	@	.09
Book, S. S. & C.	.08	@	.15
Book, Coated	.08	@	.15
Coated Lithograph	.10	@	.15
Label	.08	@	.15
News	.05	@	.07
No. 1 Jute Manila	.12	@	.13
Manila Sul., No. 1	.08	@	.08½
Manila No. 2	.07½	@	.08
No. 2 Kraft	—	@	.08½
No. 1 Kraft	—	@	.09½
Common Bogus	.02½	@	.03
Straw Board, News Board, Chip Board, Wood Pulp Board (Carload Lots), Binder Boards— Per ton, Carload lots	All quotations withdrawn		
Tarred Felts—			
Regular	48.00	@	50.00
Slaters	54.00	@	56.00
Best Tarred, 1-ply (per roll)	1.35	@	1.90
Best Tarred, 2-ply (per roll)	1.00	@	1.15
Best Tarred, 3-ply	1.50	@	1.65

Bagging

F. o. b. Phila.

Gunny No. 1—			
Foreign	.75	@	—
Domestic	.70	@	—
Manila Rope	4.00	@	4.50
Sisal Rope	.75	@	.80
Mixed Rope	.75	@	.80
Scrap Burlaps	1.00	@	1.25
Wool Tares, heavy	2.50	@	2.75
Mixed Strings	.75	@	.80
No. 1, New Lt. Burlap	.75	@	.80
New Burlap Cuttings	1.75	@	2.10

Old Papers

F. o. b. Phila.

Shavings—			
No. 1, Hard White	4.00	@	4.25
No. 2, Hard White	3.50	@	3.75
No. 1 Soft White	3.60	@	3.75
No. 2 Soft White	2.00	@	2.25
No. 1 Mixed	1.50	@	1.75
No. 2 Mixed	1.00	@	1.25

(Continued on page 74)

XUM

Imports and Exports of Paper and Paper Stock

(*Continued from page 68*)

R. F. Hammond, Stockholm, Gothenburg, 750 bls., 150 tons.
American Wood Pulp Corp., Manchuria, Hamburg, 3,200 bls.
Tidewater Paper Mill Co., C. F. Gordon, Liverpool, N. S., 7,460 bls.
Tidewater Paper Mill Co., Nova Queen, Liverpool 8,257 bls.
Tidewater Paper Mill Co., Barnholm, Murray Bay, 1,342 tons bulk.
Tidewater Papermills Co., Minas Prince, Liverpool, N. S., 8,887 bales.
Kelly & Co., Inc., Truro Queen, Pt. Medway, N. S., 4,030 bales.
J. Andersen & Co., Norefjord, Porsgrund, 600 bales.
Equitable Trust Co., Storaker, Trondhjem, 1,200 bales, 200 tons.
Wilson Lyon & Co., Inc., Storaker, Trondhjem, 150 bales, 25 tons.

CLEVELAND IMPORTS

WEEK ENDING SEPTEMBER 9, 1922

S. Silberman, Vechtdyk, Rotterdam, 112 bls. rags.
S. Silberman, Vechtdyk, Rotterdam, 236 bls. shopperies.
S. Silberman, Westerdyk, Rotterdam, 192 bls. rags.
S. Silberman, N. Amsterdam, Rotterdam, 52 bls. shopperies.

TORONTO IMPORTS

WEEK ENDING SEPTEMBER 9, 1922

E. C. Melby, Norefjord, Bergen, 165 rolls wrapping paper.

MONTREAL IMPORTS

WEEK ENDING SEPTEMBER 9, 1922

Katzenstein Keene, Inc., Canadian Challenger, Antwerp, 879 bls. rags.

PHILADELPHIA IMPORTS

WEEK ENDING SEPTEMBER 9, 1922

E. J. Keller Co., Inc., Elzasier, Antwerp, 63 bls. rags.
E. J. Keller Co., Inc., Blydendyk, Rotterdam, 242 bls. rags.
E. J. Keller Co., Inc., Manchester Exchange, Manchester, 220 bls. rags.
E. J. Keller Co., Inc., Argus, Antwerp, 419 bls. rags.
E. J. Keller Co., Inc., W. Eldara, Havre, 360 bls. rags.
Katzenstein & Keene, Inc., Blydendyk, Rotterdam, 223 bls. rags.
Katzenstein & Keene, Inc., P. Izel, Havre, 414 bls. rags.
Katzenstein & Keene, Inc., Han. Court, Nantes, 880 bls. rags.
Castle, Gottheil & Overton, Naperian, Antwerp, 768 bls. rags and 542.
Castle, Gottheil & Overton, Manhattan, Hamburg, 631 bls. rags.
Castle, Gottheil & Overton, Blydendyk, Amsterdam, 316 bls. rags.
Castle, Gottheil & Overton, Argus, Antwerp, 146 bls. rags.
Castle, Gottheil & Overton, Manhattan, Bremen, 110 bls. rags.
Castle, Gottheil & Overton, Manchester Exchange, Manchester, 302 bls. new cuttings.
Castle, Gottheil & Overton, Blydendyk, Rotterdam, 712 bls. rags.
Castle, Gottheil & Overton, Northwestern Miller, London, 201 bls. waste paper.
Dill & Collins, by same, 276 bls. waste paper.
J. Lang Paper Co., Morristown, Hamburg, 65 bls. rags.
L. H. Abenheimer, by same, 209 bls. rags.
Katzenstein & Keene, Inc., by same, 76 bls. rags.
Ladenburg, Walman & Co., by same, 187 bls. rags.
Salomon Bros. & Co., by same, 79 bls. rags.
M. O'Meara Co., by same, 62 bls. rags.
Mechanics & Metals Nat'l Bank, by same, 335 bls. rags.
Int'l Acceptance Bank, by same, 194 bls. rags.
Coal & Iron Nat'l Bank, by same, 77 bls. rags.
Katzenstein & Keene, Inc., Innoko, Antwerp, 384 bls. rags.
E. J. Keller Co., Inc., by same, 156 bls. rags.
Corn Exchange Nat'l Bank, by same, 307 bls. rags.
S. Silberman, by same, 299 bls. rags.
S. Datz & Sons, by same, 156 reels, 10 cs. paper.
Perkins, Goodwin & Co., Taormina, Genoa, 18 cs. printing paper.
Castle, Gottheil & Overton, ——, Hamburg, 955 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING SEPTEMBER 9, 1922

R. F. Hammond, Nornega, Gothenburg, 750 bls. wood pulp, 150 tons.
Castle, Gottheil & Overton, C. of Flint, Hamburg, 825 bls. woodpulp.
Brown Bros. & Co., Africanic, Stugsund, 2,000 bls. wood pulp, 406 tons.
American Woodpulp Corp., Africanic, Svartnik, 750 bls. wood pulp, 152 tons.
Scandinavian Amer. Trading Co., by same, 2,400 bls. wood pulp, 406 tons.
Scandinavian Amer. Trading Co., Africanic, Ntanajo, 2,310 bls. wood pulp, 385 tons.
E. M. Sergeant & Co., by same, 300 bls. wood pulp, 50 tons.
J. Andersen & Co., Africanic, Svans, 150 bls. wood pulp, 25 tons.
A. J. Pagel & Co., Inc., by same, 2,850 bls. wood pulp, 481 tons.
A. J. Pagel & Co., Inc., Africanic, Domsjo, 4,200 bls. wood pulp, 711 tons.
A. J. Pagel & Co., Inc., Africanic, Gefle, 2,000 bls. wood pulp, 254 tons.
Scandinavian Amer. Trading Co., Africanic, Gothenburg, 1,088 bls. wood pulp, 158 tons.
Johanesson, Wales & Spaire, Inc., by same, 254 bls. wood pulp, 50 tons.
Nilsen, Lyon & Co., Inc., by same, 254 bls. wood pulp, 25 tons.
C. K. MacAlpine, by same, 110 bls. paper.
C. K. MacAlpine, Africanic, Gothenburg, 1,004 reels paper.
Katzenstein & Keene, Inc., Nitonian, Liverpool, 93 bls. new cuttings.
Katzenstein & Keene, Inc., Vechtdyk, Rotterdam, 43 bls. rags.
E. Butterworth & Co., by same, 47 bls. paper stock.
E. J. Keller Co., Inc., by same, 115 bls. rags.
Castle, Gottheil & Overton, Naperian, Antwerp, 45 bls. rags.
J. B. Moors & Co., Dakarian, London, 16 bls. cuttings.
1st Nat'l Bank of Boston, by same, 257 bls. rags.
Bird & Son, by same, 112 bls. rags.
Bird & Son, by same, 50 bls. waste paper.
American Express Co., by same, 98 bls. waste paper.
Crocker, Burbank Co., by same, 170 bls. waste paper.
G. W. Wheelwright Paper Co., by same, 111 bls. waste paper.
Baring Bros. & Co., by same, 28 bls. waste paper.
Old Colony Trust Co., by same, 240 coils, 28 bls. old rope.
Hollingsworth, Vose & Co., by same, 107 coils, 14 bls. old rope.
Brown Bros. & Co., by same, 605 coils, 70 bls. old rope.

CHARLESTON IMPORTS

WEEK ENDING SEPTEMBER 9, 1922

E. J. Keller Co., Inc., Flour Spar, Antwerp, 704 bls. bagging.
E. J. Keller Co., Inc., Coldwater, Antwerp, 300 bls. bagging.

NEW ORLEANS IMPORTS

WEEK ENDING SEPTEMBER 9, 1922

E. J. Keller Co., Inc., Coldbrook, Antwerp, 597 lbs. rags.
E. J. Keller Co., Inc., Governor, Liverpool, 155 bls. bagging.
E. J. Keller Co., Inc., Dorington Court, Havre, 62 bls. bagging.

BALTIMORE IMPORTS

WEEK ENDING SEPTEMBER 9, 1922

R. F. Hammond, Winnebago, Gothenburg, 2,000 bls. wood pulp, 400 tons.
Castle, Gottheil & Overton, Blydendyk, Amsterdam, 226 bls. rags.
Castle, Gottheil & Overton, Naperian, Antwerp, 211 bls. rags.
Katzenstein & Keene, Inc., Capulin, London, 100 bls. rags.
Katzenstein & Keene, Inc., by same, 128 bls. bagging.
E. J. Keller Co., Inc., Homestead, Antwerp, 177 bls. bagging.
E. J. Keller Co., Inc., by same, 2,180 bls. rags.
E. J. Keller Co., Inc., C. of Flint, Hamburg, 304 bls. rags.
Wood Pulp Trading Co., Ltd., Sagoland, Igesund, 3,450 bls. wood pulp.

Orono Paper Co. Suit on Pulpwood Contract

[FROM OUR REGULAR CORRESPONDENT]

BANGOR, Me., September 11, 1922.—An important suit was entered for trial in the Penebscot County Superior Court last week, action being brought by the Patton-Gulnac Company of Bangor against the Orono Pulp and Paper Company, whose offices are in Bangor and mill at Basin Mills. In this action the sum of $121,253.23 is claimed as balance due on a contract for pulpwood, the itemized statement being somewhat lengthy. B. F. Maher, of Augusta, appears as attorney for the plaintiff company.

Resigns From Nekonegan Corp.

[FROM OUR REGULAR CORRESPONDENT]

OLD TOWN, Me., September 11, 1922.—Ralph C. Kitchen has resigned as paymaster and clerk of the Nekonegan Paper Corporation of Old Town to accept a position with George W. Barnjum. His new headquarters will be at Annapolis Royal, Nova Scotia, and he will take up his new duties about September 20.

Mr. Kitchen is exalted ruler of the local Elks, is prominent in Democratic political circles and is very popular with many Old Town friends.

XUM

The B Co INC

Quality: *It means more than price*

PULPS

"Hafslund" "Bear" "Forshaga"

BLEACHED SULPHITE

"Klarafors"

EASY BLEACHING SULPHITE

STRONG UNBLEACHED SULPHITE

"Hurum" "Bamble"

EXTRA STRONG KRAFT; BLEACHED AND BLEACHABLE SULPHATE

"Edsvalla" 50% MOIST "Dejefors" DRY

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Over forty years experience in the clay industry has naturally resulted in the adoption of the most scientific methods and practices.

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Seamless felts for fast running.
Satin Style felts for finish.
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75-77 Duane St., N. Y., and direct

XUM

Miscellaneous Markets

OFFICE OF THE PAPER TRADE JOURNAL,
TUESDAY, SEPTEMBER 12, 1922.

ALUM.—The market for this commodity is firming in tone due to the increasing scarcity of available supplies. Powdered alum is listed at $3.50 to $3.75 per hundred pounds while the ground is quoted at $3.40 to $3.60.

BLEACHING POWDER.—Increased freight rates has brought the price of bleach up around $1.70 and $1.75 a hundred for all new business. This price extends to all large drum quantities, works. Some bleach is still being turned over at the $1.60 and $1.65 price, but higher transportation and coal costs have forced a general increase.

BLANC FIXE.—Prices are fairly steady in the blanc fixe market and a decided stiffening is anticipated with the approach of fall business. The pulp is quoted at $40 to $50 a ton and the dry still holds at $75 to $85.

CAUSTIC SODA.—Caustic prices continue unchanged despite production difficulties. Sixty per cent basis caustic is still quoted in the neighborhood of 2.70 cents a pound, works.

CHINA CLAY.—Transatlantic freight rate increases combined with the recent difficulty in securing enough ships to transport China Clay to this country, have had the effect of raising the price of the commodity. Unwashed domestic clay is now quoted at $6 to $8.50 per ton, washed at $8 to $11 and imported at $16 to $23.

LIQUID CHLORINE.—What is described by a prominent chlorine dealer as a "catch-as-catch-can" demand now prevails in the market for this chemical. It is only by looking back at the earlier summer months that any appreciable improvement may be noted in the tone of the market. Prices vary from 4.00 to 7.00 cents a pound, depending upon the quantity and container.

ROSIN.—Rosin prices have been fairly steady throughout the past week, grades E, F and G being listed at $6.25 per barrel of 280 pounds, New York. There is a steady activity in the market and demand appears to be on the increase.

SALTCAKE.—New York dealers state that it is almost impossible to secure any quantity of saltcake at present. Everyone is coming into the market at once with the result that higher prices are being asked with nearly every sale that is made. Saltcake is now quoted as high as $22 per ton, works, and acidcake is up around $25 and $26.

SATIN WHITE.—Moving in regular quantities, satin white has held fairly steady at the quoted price of 1.50 to 2.00 cents a pound. Dealers report that the demand is gradually increasing on the part of fine and book paper manufacturers.

SODA ASH.—No change has been noted in the soda ash market of the past week. The 1922 price schedule of 1.51 cents a pound still rules for barrel quantities, while bulk and bag lots are quoted at 1.20 and 1.30 cents respectively.

SULPHUR.—Brimstone is finding its way into consuming channels in regular quantities, the schedule price of $18 to $20 per ton still obtaining. Higher prices are anticipated beginning January 1.

STARCH.—The starch market has been steady to firm in recent weeks and no perceptible price variations have occurred of late. Powdered starch is quoted at 2.47 cents a pound in bags and 2.75 in barrels, while pearl starch is approximately 1/10 of a cent a pound higher. Manufacturers expect prices to remain easy for the next couple of months as a result of the large corn crop.

SULPHATE OF ALUMINA.—The aluminum sulphate market is reported to be in a very serious condition due to the fact that many eastern plants are embargoed and are unable to obtain sufficient quantities of bauxite. Producers of this chemical are paying outrageous prices for coal, in many cases ranging from 300 to 400 per cent above previous costs, and are, consequently, forced to ask higher prices. Iron free is quoted at $2.25 to $2.50 per cwt. and commercial at $1.50 to $1.75.

Market Quotations

(*Continued from page 71*)

Solid Ledger Stock.	2.25	@	2.50
Writing Paper.....	.02	@	2.25
No. 1 Books, heavy.	1.80	@	1.90
No. 2 Books, light.	1.40	@	1.50
No. 1 New Manila.	2.75	@	3.00
No. 1 Old Manila..	1.50	@	1.75
Container Manila...	1.20	@	1.25
Old Kraft.....	2.25	@	2.50
Overissue News....	1.25	@	1.30
Old Newspaper....	1.15	@	1.20
No. 1 Mixed Paper.	.01	@	1.10
Common Paper....	.75	@	.80
Straw Board, Chip.	.75	@	.80
Binders' Bd. Chip..	.75	@	.80
Domestic Rags—New. Price to Mill, f. o. b. Phila.			
Shirt Cuttings—			
New White, No. 1	.10	@	.10¼
New White, No. 2	.05½	@	.06½
Silesias, No. 1...	.05½	@	.06
New unbleached..	.09	@	.09½
Washables	.03½	@	.03¾
Fancy	.04¼	@	.04¾
Cottons—according to grades—			
Blue Overall.....	.04½	@	.05¼
New Blue.....	.02	@	.02¼
New Black Soft.	.03	@	.03¼
New Light Seconds	.02	@	.02¼
Khaki Cuttings...	.02¼	@	.03¼
Corduroy	.02	@	.02½
New Canvas.....	.07	@	.07¾
New Black Mixed Old	2.75	@	3.00
White, No. 1—			
Repacked	.06	@	.06½
Miscellaneous ...	.04½	@	.04¾
White, No. 2—			
Repacked	.03	@	.03½
Miscellaneous ...	.02¾	@	.02¾
Thirds and Blues—			
Repacked	1.65	@	1.80
Miscellaneous ...	1.40	@	1.55
Black Stockings....	1.75	@	2.25
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.90	@	1.00
No. 3.....	.80	@	.90
No. 4.....	.80	@	.90
No. 5A.....		nominal	
B.....		nominal	
C.....		nominal	

BOSTON

[FROM OUR REGULAR CORRESPONDENT.]

Paper

Bonds	.06¾	@	.65
Ledgers	.07½	@	.55
Writings	.07½	@	.42
Superfine	.15	@	.22½
Fine	.15	@	.18
Books, S. & S. C....	.07	@	.12
Books, M. F.....	.05¾	@	.10
Books, coated.....	.08	@	.16
Label	.08½	@	.13
News, sheets	4.00	@	4.25
News rolls.....	4.00	@	4.25
Manilas—			
No. 1 Manila...	$5.50	@	7.00
No. 1 Fibre	.07½	@	—
No. 1 Jute.....	10.50	@	12.00
Kraft Wrapping...	.06½	@	.12
Common Bogus.....	3.00	@	3.50

Boards

(Per Ton Destination)

Chip	$50.00	@	55.00
News, Vat Lined..	51.50	@	55.00
Wood, Vat Lined..	60.00	@	65.00
Filled News Board.	52.50	@	55.00
Solid News Board..	60.00	@	65.00
S. Manilla Chip....	62.50	@	67.50
Pat. Coated.....	70.00	@	85.00

Old Papers

Shavings—			
No. 1 Hard White	4.00	@	4.25
No. 1 Soft White	3.30	@	3.45
No. 1 Mixed....	1.50	@	1.75
Ledgers & Writings	1.75	@	2.00
Solid Books.....	2.00	@	2.25
Blanks	1.70	@	1.80
No. 2 Light Books.	1.50	@	1.80
Folded News, overissues	19.00	@	20.00
Gunny Bagging ...	.85	@	.90
Manila Rope.....	5.75	@	6.00
Common Paper....	.80	@	.90
Old News.....	.80	@	.90
Old Kraft.....	1.75	@	2.00

TORONTO

[FROM OUR REGULAR CORRESPONDENT.]

Paper

(Mill Prices to Jobbers f. o. b. Mill)

Bond—			
Sulphite	.11	@	.12½
Light tinted.....	.12	@	.13½
Dark tinted.....	.13½	@	.15
Ledgers (sulphite).	—	@	.13
Writing	.9½	@	.12
News, f. o. b. Mills—			
Rolls (carloads).	3.50	@	
Sheets (carloads).	—	@	4.25
Sheets (2 tons or over)	—	@	4.50
Book—			
No. 1 M. F. (carloads)	8.50	@	—
No. 2 M. F. (carloads)	7.50	@	—
No. 3 M. F. (carloads)	7.00	@	—
No. 1 S. C. (carloads)	9.00	@	—
No. 2 S. C. (carloads)	8.00	@	—
No. 1 Coated and litho.	14.00	@	—
No. 2 Coated and litho.	13.00	@	—
No. 3 Coated and litho.	12.25	@	—
Coated and litho., colored	14.25	@	—
Wrapping—			
Grey	4.50	@	—
White Wrap	5.00	@	—
"B" Manila	5.50	@	—
No. 1 Manila ..	6.75	@	—
Fibre	6.75	@	—
Kraft, M. F.	8.00	@	—
M. G.	8.15	@	—

Pulp

(F. o. b. Mill)

Ground wood....	$25.00	@	37.50
Sulphite easy bleaching	60.00	@	65.00
Sulphite news grade.	45.00	@	55.00
Sulphite, bleached..	80.00	@	90.00
Sulphate	70.00	@	

Old Waste Papers

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut..	3.75	@	—
Soft White Book Shavings	3.40	@	3.40
White Bl'k News	1.70	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.70	@	—
Light and Crumpled Book Stock	1.55	@	—
Ledgers and Writings	1.95	@	—
Solid Ledgers....	1.95	@	—
Manilas—			
New Manila Cut.	1.70	@	1.80
Printed Manilas..	.90	@	1.00
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	.90	@	—
Folded News....	.80	@	—
No. 1 Mixed Papers	.70	@	—
Domestic Rags—			
Price to mills, f. o. b. Toronto.		Per lb.	
No. 1 White shirt cuttings	.11	@	.11¼
No. 2 White shirt cuttings	.06½	@	—
Fancy shirt cuttings	.05	@	.05½
No. 1 Old whites	.04	@	—
Thirds and blues	.02	@	.02½
		Per cwt.	
Black stockings..	2.00	@	2.25
Roofing stock:			
No. 1.....	1.35	@	—
No. 2.....	1.20	@	—
Roofing stock:			
Manila rope.....	.06	@	.06¼
No. 2.....	.01½	@	—
Gunny bagging....	1.00	@	1.35

The Home of Quality

FACTORY
132ND TO 133RD ST. & BROOK AVE

PAPER BAGS

Sacks and Specialties

ESTABLISHED 1901

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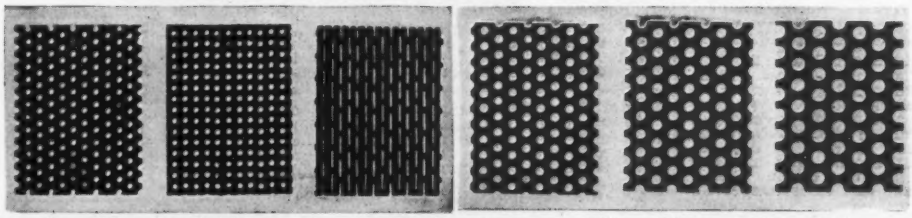
This Registered Trade Mark Octagon

on a Paper Bag Vouches for Its Good Quality

PERFORATED METALS

All sizes and shapes of Holes



All kinds and thicknesses of Metal

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1

Felt Test—Lowest Cost per Ton

If you judge felt values, not by what you put into the equipment, but what you get out of it—then you will specify ORR 3 stripe Endless Felts, for ORR felts will produce the lowest cost per ton. They "stand up" under severe usage. Orr durability is acknowledged everywhere. Their strength and long life are as dependable as their reliability and quality.

In the 32 grades of Felts and Jackets we can match your most exacting demands. Tell us the kind of paper you desire to make, and we will send you samples of felts that will economically serve you and help you to produce paper at lowest cost per ton.

THE ORR FELT & BLANKET COMPANY, Piqua, Ohio

English China Clays ECCO CLAYS Sales Corporation

33 WEST 42ND ST., NEW YORK

Ecco Clays 500,000 Tons Annually

DELIVERIES FROM PRODUCER INSURE AND ENABLE YOU TO PRODUCE UNIFORM PAPER

Highest Grades Filler and Coating Clays

WANT AND FOR SALE ADVERTISEMENTS

CLASSIFIED RATES

Minimum rate for advertisements of 25 words or less, first insertion, $1.00.

SITUATION WANTED, 4 cents a word for first insertion and 2 cents a word for each subsequent insertion of same ad. No ad of less than 25 words accepted.

HELP AND MISCELLANEOUS WANTS, and small For Sale Ads, 4 cents a word for each and every insertion. No ads of less than 25 words accepted.

When answering advertisements, please address the Box Number given in ad.

Answers can be forwarded care Paper Trade Journal, and will be promptly forwarded without extra charge. All should be sent to the New York office, 10 East 39th street. And all should be addressed as the advertisement directs in every case and not simply to the paper.

All classified ads for the current issue must be in hand not later than Monday preceding date of publication.

HELP WANTED

WANTED—Superintendent for one machine Mill to run on high grade Patent Coated Boards. Mill will be operated as a branch of large folding box factory. Applicant must be capable of taking charge of Mill including purchasing of supplies, hiring of help and supervising production. Big possibilities for the right man, who has had experience on this grade of board. Write, giving experience, age and salary expected. Address, Box 5421, care Paper Trade Journal. S-14

WANTED—Machinist Engineer, all around mechanic, capable of taking charge, repair work steam power plant and machine shop of small mill in Philadelphia district. State age, experience and wages required. Address, Box 5417, care Paper Trade Journal. S-14

PAPER BAG SALESMAN—Experienced to manage bag paper department; have exclusive selling rights in Eastern territory for large out of town manufacturer. Good opportunity for party with established trade, give complete experience in first letter; commission basis. Address, Box 5418, care Paper Trade Journal. S-14

SALESMAN WANTED for Coating Mill situated in the East. Must be high class man and have considerable experience in selling high class coated papers. Good position for the right man. Address, Box 5364, care Paper Trade Journal. S-14

WANTED—First class machine tender on two-cylinder tissue and specialty machine. Address, Box 5365, care Paper Trade Journal. S-14

WANTED—Mechanical engineer with Paper and Pulp Mill experience. Must be familiar with structural steel and reinforced concrete design. Permanent position for right man. Give age, references, nationality, salary receiving and expected in first letter. Address, Box 5388, care Paper Trade Journal. S-14

PURCHASING AGENT

Energetic and up-to-date, immediately, for modern waxed paper plant in Middle West. Must be experienced paper man and fully conversant with all converting processes. One with mechanical and engineering knowledge preferred. Well paying, permanent position with future. Answer with full details of references and experience. Address, Box 5378, care Paper Trade Journal. S-14.

HELP WANTED

WANTED—Night Superintendent, Mill middle west, manufacturing converted sulphite. Must be good, sober, industrious worker. Must understand washing, bleaching and general making of stock. One who can get good production. Married man preferred. References first letter. Address, Box 5401, care Paper Trade Journal. S-21

WANTED—Back tenders. Experienced on roofing machines. Mill in Eastern city. Good wages. Steady work. Address, Box 5402, care Paper Trade Journal. S-21

WANTED—Competent Board Mill Superintendent thoroughly capable repairing mill damaged by fire and operating. Attractive proposition to right man. Mill located in South. Address, Box 5403, care Paper Trade Journal. S-21

SALESMAN or agent to represent manufacturer. One calling on tanners or paper mills, to carry as a side line special Aniline Colors for this trade. Address, Box 5404, care Paper Trade Journal. S-14

WANTED — Thoroughly competent container and carton salesman to travel large producing territory in midwest. Territory confined to two states. Only experienced applicants will be considered. Straight salary. Splendid opportunity for high grade salesman. Address, Box 5405, care Paper Trade Journal. S-14

WANTED—Superintendent for Fourdrinier Tissue Mill. Must be up on Waxing papers from ten pound to thirty pound. Send copy of references and state experience and salary wanted. Address, Box 5389, care Paper Trade Journal. S-14

WANTED—Beater engineer, back tender cutterman and trimmerman for book and railroad writing mill. Give references in replying. Address, Box 5391, care Paper Trade Journal. S-21

WANTED—Capable and reliable Beater Engineer for Mill located in Middle West. manufacturers of sulphite papers and specialties. Experience necessary on colors. Good wages. Three tour day. Address, Box 5394, care Paper Trade Journal. S-14

Toilet Paper Salesman

We have opening in our Sales Department for two (2) Traveling salesmen who have had experience in selling Toilet Paper and towels to the large Jobbing Trade. On account large territory and constant traveling we can consider only unmarried men, or men without family attachments. American nationality. Age 21 to 40. Salary and expenses. Write giving age, experience and full details in first letter stating salary expected. Address, Sales Manager, Sauquoit Paper Co., New Hartford, New York. S-14

SITUATIONS WANTED

WANTED—Position as Machine Tender on Harper and Edwards attachment Cylinder Tissue Machine. Heavy weight waxing paper on Harper. Address, Box 5398, care Paper Trade Journal. S-14

YOUNG MAN, 24, at present employed wishes to make change. Desirous of connecting with reliable concern, where there is possibility for good future. Have worked in capacity as salesman, office man and have had five years of mill experience. Address, Box 5367, care Paper Trade Journal. tf

SITUATIONS WANTED

WOOD PULP AND PAPER MILL Supplies man with about 10 years' experience in selling and purchasing these materials desires connection with progressive firm. A-1 references. Address, Box 5255, care Paper Trade Journal. S-14

ASSISTANT TO GENERAL MANAGER or President as Plant Manager. Wide experience on rope paper and bags. Capable taking entire charge as executive. Age, 45. Desirable connection wanted rather than immediate large salary. Address, Box 5419, care Paper Trade Journal. S-21

MECHANICAL ENGINEER with several years' practical experience as superintendent of ground wood, sulphite and news print mills, would like to make change. Address, Box 5406, care Paper Trade Journal. S-28

PAPER AND PULP MAN: Open for engagement. Extensive experience. Practical knowledge purchasing, manufacturing and selling. Specialty increasing profits. Highest references. Address, Box 5407, care Paper Trade Journal. S-21

SUPERINTENDENT and technical man with nine years' experience in paper making and laboratory research desires opportunity to learn all phases of office administration in up-to-date paper mill. Nominal salary required. Address, Box 5408, care Paper Trade Journal. tf

SUPERINTENDENT: Now employed desires to make change. Well up on all grades of Board. Can handle help and get production. Can handle own repairs and construction. Address, Box 5409, care Paper Trade Journal. O-12

MECHANICAL ENGINEER and Master Mechanic, 18 years' experience in Pulp and Paper Mill Construction. Repairs. Wants Position. Expert in hydraulic, steam and electric power. Address, Box 5410, care Paper Trade Journal. S-14

BOSS FINISHER whom previous managers and superintendents have stated "was the best finishing foreman ever employed by them." Experienced on cutters, calendars and shipping. Best references. Address, Box 5374, care Paper Trade Journal. S-14

MASTER MECHANIC with a large experience in construction, reconstruction and efficiency, desires to make change. Address, Box 5383, care Paper Trade Journal. tf

SUPERINTENDENT of ability open for position. Expert on colors, familiar with all grades of board. Understands plant thoroughly. Is a good executive and can get results. Address, Box 5384, care Paper Trade Journal. S-28

WANTED: By a New York Manager and Representative of an out of town Manufacturer of Toilet Paper and Paper Towels, similar connection with reputable manufacturer. Have been in the line over 20 years, over 15 years of which I have spent with my concern. Address, Box 5114, care Paper Trade Journal. S-14

PRACTICAL PAPER MAKER desires a position with a board or specialty mill. Having had experience in both cylinder and fourdrinier mills in all departments. Have been doing engineering work in different mills for past four years. Experienced in construction and mechanical details. Address, Box 5233, care Paper Trade Journal. tf

SULPHITE SUPERINTENDENT, 20 years' practical and technical training, wishes to get in communication with Managers of Mills who want the best and are not getting it. Address, Box 5353, care Paper Trade Journal. O-5

MECHANICAL ENGINEER; 12 years' experience with thorough knowledge of power plant and engineering. Will submit record for investigation to executive requiring reduction in power costs and coal consumption. Address, Box 5400, care Paper Trade Journal. S-28

XUM

SITUATIONS WANTED

MILL MAN seeking new connection. Fifteen years' experience manufacturing wrapping paper, bag paper, news specialties, sulphite and ground wood. Also sales experience, cost accounting and purchasing. Good record in executive positions. Now employed. Address, Box 5411, care Paper Trade Journal. S-21

COST ACCOUNTANT and office manager with sound paper experience and first class references seeks responsible position. Address, E. J. B., P. O. Box 760, Cincinnati, Ohio. S-14

SUPERINTENDENT wants position. Can make all grades of box board, and all kinds of wrapping paper, Bogus Mill, can bring an order for one hundred tons a month. Address, Box 5412, care Paper Trade Journal. S-14

SALESMANAGER with 15 years' experience in merchandising and handling of salesmen, desires connection with high grade respectable paper mill. Address, Box 5413, care Paper Trade Journal. S-21

SALESMANAGER AND BUSINESS EXECUTIVE: 15 years' experience in practically all lines of paper, particularly specialties, 12 years with one concern. Experience in administration, buying, selling, advertising and general management. Christian, 33 years old. Open for a permanent connection where there is a future for the right man. Address, Box 5385, care Paper Trade Journal. S-21

SALESMAN—Specialist on Coated Lithographic Papers and Boards; also Offset and Printing Papers, desires to connect with mill or dealers having mill connections. Can produce good business. Address, Box 5260, care Paper Trade Journal. S-28

FOR SALE

MACHINERY FOR SALE—Tanks, 300 to 50,000 Gallon Steel Storage Tanks. Copper and Iron Jacketted Kettles, all makes and sizes. Filter presses. 1 Oliver Continuous Filter 6' x 4', 18" x 18" and 24" x 24", all makes and sizes. Pumps. No. 5 Cameron Piston Pump Bronze End, Worthington and other makes. Air Compressors. Bury 16 x 8 x 10 (2-stage). Other makes and sizes. Mixers. Werner & Pfeiderer, Kent, Day & Ross. All sizes. R. Geib & Sons, 214 Livingston Street, Newark, N. J. S-14

FOR SALE: 16—7 Column Steel Chases. 1 Book Bundling Press. 7 Rolls each 50½" and 33½" Great Northern Newsprint. Also quantity 18 x 23 matrix and tissue paper. Address, Box 5420, care Paper Trade Journal. S-21

FOR SALE—6 Farnum Drives. Complete Triple-Deck frames for 44 Dryers. Will arrange terms to suit. Chesapeake Paper Board Co., Baltimore, Maryland. tf

FOR SALE

30-TON GROUNDWOOD MILL

Situated on the St. Lawrence River. Abundant supply of pure water and electrical power. 3 lines of trunk railway. Ample yardroom with sidings. Apply not later than September 18th to Ian A. Ross, 10 Adelaide Street East, Toronto, Ontario. S-14.

MISCELLANEOUS

WANTED—One or two Wandell Rotary Screens, also one Save-all. State age, condition and full details, together with lowest price for cash. Address, Box 5377, care Paper Trade Journal. S-14

WANTED—One 50-inch Seybold Paper Cutter, one 22x44 Sheridan die press, one large embossing press, one 12-inch or larger rotary divider machine. Address, Box 5396, care Paper Trade Journal. S-14

WANTED — One Nash Hytor Turbine Vacuum Pump, Number four or number six. Write Mill Department. Rose Lithographic Corporation, 55 33rd Street, Brooklyn, N. Y. O-5

CYLINDER MOULDS WANTED—Either 36 or 30 inches diameter and anywhere from 80 to 88 inches face. Price must be reasonable. Address, H. O. Ruby, York, Pa. S-28

ADVERTISER wishes to correspond with party owning small Paper Mill with Fourdrinier Machine about 76 inches wide, to manufacture specialty realizing large profits. Further particulars. Address, Box 5414, care Paper Trade Journal. S-21

WANTED—The present address of Fred Fay. Address, Box 5415, care Paper Trade Journal. S-14

WANTED AT ONCE, at bargain price, 1,000 pound iron tub beater, must be in good condition. Address, Box 5416, care Paper Trade Journal. S-14

Do You Want Help?

Or have you some machinery you would like to dispose of?

Try the Want Pages

of the

Paper Trade Journal

MISCELLANEOUS

SHARTLE

can fill your requirements in used or new machinery.

THE SHARTLE BROTHERS MACHINE CO.

Middletown Ohio

TF.

OFF PEAK POWER

About 35,000,000 Kilowatt Hours per year available at Tonawanda, or North Tonawanda, New York.

Will make attractive rate to anyone who can utilize this power.

Location at the foot of navigation of the Great Lakes and the Western Terminus of the New York State Barge Canal.

Rail transportation facilities unsurpassed. Labor and Living Conditions Good.

Tonawanda Power Company
North Tonawanda, N. Y.

O-5

Rebuilt Paper Mill Machinery

IN STOCK AND GUARANTEED

Not Where Is and As Is

FOURDRINIER TISSUE MACHINE—One 68".
FOURDRINIER PARTS—Pusey & Jones 118", 100", Kutter Trowbridge 96".
PRESS PARTS FOR PAPER MACHINES—Pusey & Jones bell crank housing with rolls 18"x117". Black & Clawson swing arm housing.
DRYERS—Four 48"x111", thirteen 36"x95", one 36"x80", two 36"x73", four 48"x68", one 84"x67", eleven 42"x66", two 36"x48", four 20"x39".
CHILLED CALENDERS—One 86" six roll, one 82" five roll, one 66" five roll, one 54" five roll, two 58" five roll.
DILLON DOCTOR—For machine calender 60" to 120" face.
SLITTERS & WINDERS—One 120" Warren, one 108" Kidder, one 63" Langston, one 36" Kidder.
REELS—Pusey & Jones two drum, Rice Barton & Fales two drum.
BEATERS—Four N & W 72"x42", one Dilts 62"x50" iron tub, one Jones 62"x52", one Dillon 60"x48", two Emerson 54"x60", three Downingtown 54"x42" iron tub, two Emerson 53"x52", seven Horne 36"x36", two No. 2 Claflins, two No. 1 Claflins.
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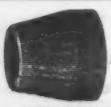

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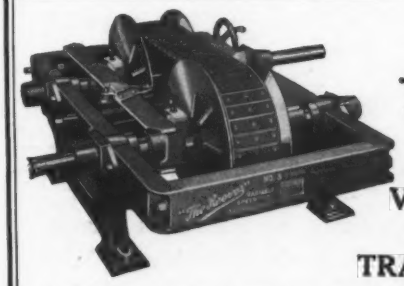

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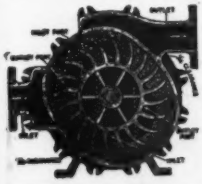
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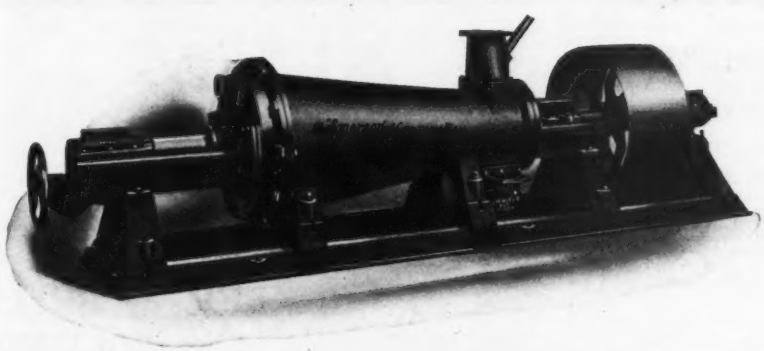

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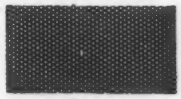

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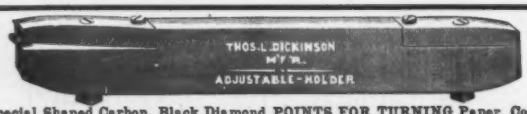

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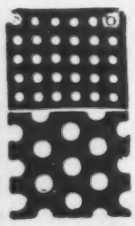

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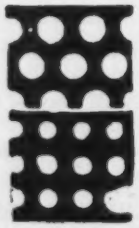

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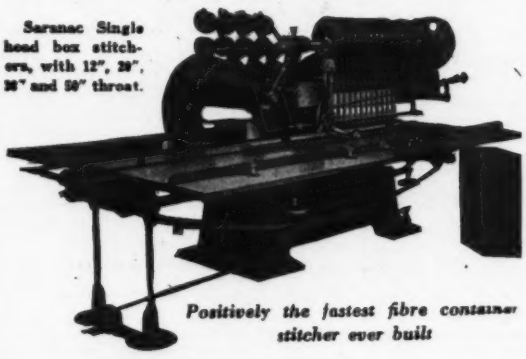

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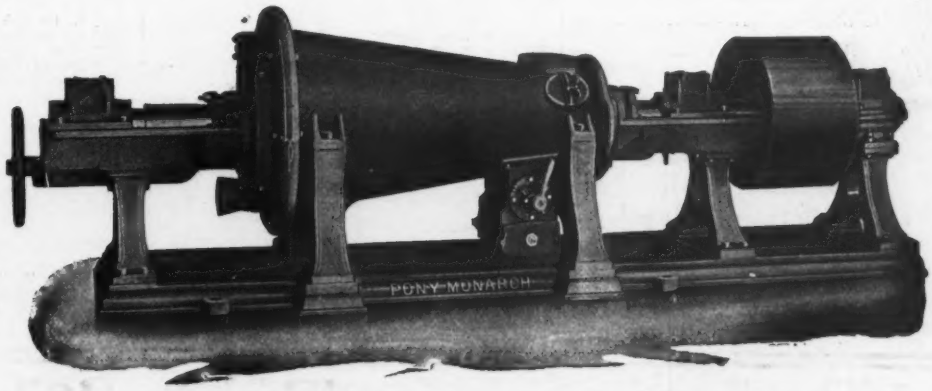

The Noble & Wood Machine Co., Hoosick Falls, N.Y.

XUM

CLASSIFIED INDEX TO ADVERTISEMENTS

ACID SYSTEMS. Page
G. D. Jenssen Company ... 81
ADDING MACHINE ROLLS.
Paper Manufacturing Co ... 86
AGALITE.
Union Talc Co ... 86
U. S. Talc Co. ... 86
ALUM.
The Kalbfleisch Corp ... —
Pennsylvania Salt Mfg. Co ... 92
Superior Chemical Co ... 82
Winkler Bros., Inc ... 84
ARCHITECTS AND ENGINEERS.
George F. Drew ... 80
Hardy F. Ferguson ... 80
William T. Field ... 80
George F. Hardy ... 80
G. D. Jenssen Company ... 81
Management Engineering and Development Co. ... 81
F. L. Smith ... 80
Stebbins Engineering Co ... 81
Thomas L. Tomlines & Son ... 80
Vitale & Rothery ... 80
Joseph H. Wallace & Co ... 80
ASBESTINE PULP.
International Pulp Co ... Front Cover
ASH-HANDLING MACHINERY.
Jeffrey Mfg. Co ... 8
BALL MILLS.
The Crossley Machine Co ... —
BARKERS.
Valley Iron Works ... —
BED PLATES.
Dowd Knife Works, R. J ... 19
BEARINGS (Collar Oiling).
Hill Clutch Co ... —
BEATER PADDLES.
Menasha Wood Split Pulley Co ... 78
BEATING ENGINES.
Appleton Machine Co., The ... 18
Beloit Iron Works ... 37
Claflin Engineering Co ... —
Dayton Beater & Hoist Co ... 84
Dillon Machine Co., Inc ... 90
Dilts Machine Works, Inc ... 12
Downingtown Mfg. Co ... 90
Emerson Mfg. Co ... 83
Noble & Woods Machine Co ... 87
Shartle Bros. ... 77 and 78
Valley Iron Works ... 31
BEATER BED PLATES
Bolton & Sons, Inc., J. W ... 9
BEATER ENGINE BARS.
Bolton & Sons, Inc., J. W ... 9
Dowd Knife Works, R. J ... 19
BELTING.
Goodyear Tire & Rubber Co ... —
Republic Rubber Co ... —
BOILERS.
Heine Boiler Co ... 79
BRONZE CASTINGS.
Hyde Windlass Co ... —
BUCKETS (Elevator).
Hendrick Mfg Co ... 9
BUNDLING MACHINES.
Hudson-Sharp Machine Co. ... —
CALENDER ROLLS.
Appleton Machine Co., The ... 18
Farrel Foundry & Machine Co ... —
Lobdell Car Wheel Co ... 50
Norwood Engineering Co ... 5
B. F. Perkins & Sons, Inc ... 11
Textile Finishing Machinery Co ... 88
CARBON TOOLS.
Thomas L. Dickinson ... 86
CASEIN.
Casein Mfg. Co ... —
CENTRIFUGAL PUMPS.
Valley Iron Works ... —
CHAINS. Page
Jeffrey Mfg. Co ... 8
CHEMICALS, COLORS, ETC.
Arnold Hoffman & Co., Inc ... 86
Du Pont de Nemours Co., E. I ... 43
Heller & Merz Co ... 13
Kuttroff, Pickhardt & Co ... 91
Mathieson Alkali Works, Inc ... 41
White Tar Aniline Corporation, The ... —
C. K. Williams & Co ... 92
CHEMISTS.
United States Testing Co ... 81
CLAY.
Atterbury Bros. ... Front Cover
English China Clays Sales Corporation ... 75
John W. Higman Co ... —
Miner, Edgar Co., The ... 73
Paper Makers Chemical Co ... 82
Star Clay Co ... 92
Western Paper Makers Chemical Co ... 82
CLUTCHES (Friction, Etc.).
Hill Clutch Co ... —
COGS.
N. F. Bowsher Co ... 92
Menasha Wood Split Pulley Co ... 81
COMPRESSORS (Air).
The Nash Engineering Co ... 78
CONVEYORS (Pulpwood).
Jeffrey Mfg. Co ... 8
Weller Mfg. Co ... —
CORDAGE.
Columbian Rope Co ... —
CORES.
Elixman Paper Core Co ... 16
CRANES (ELECTRIC).
Shepard Electric Crane & Hoist Co ... 16
CREPEING MACHINES.
Hudson-Sharp Machine Co ... —
CUTTERS.
Smith & Winchester Mfg. Co ... 10
DIE CUTTERS.
Hoggson & Pettis Mfg. Co ... —
Independent Die Co., Inc ... 6
DIGESTERS.
American Welding Co ... —
Biggs Boiler Works Co ... —
DRINKING CUPS.
F. N. Burt Company, Ltd ... 15
Vortex Mfg. Co ... 6
DRIVES.
Westinghouse Electric & Mfg. Co ... —
DRIVES (Gear).
Farrel Foundry & Machine Co ... —
DRIVES (Silent Chain).
Morse Chain Co ... 80
DYERS
Biggs Boiler Works Co ... —
DRYER EXHAUSTS.
The Nash Engineering Co ... 81
DRYING SYSTEMS.
Open Coil Heater & Purifier Co ... —
W. F. Pickles ... 4
Ross Engineering Co., J. O ... 80
B. E. Sturtevant Co ... 81
DYES, ANILINE.
Heller & Merz ... 13
National Aniline & Chemical Co ... 29
White Tar Aniline Corporation, The ... —
DYE STUFFS.
Du Pont de Nemours & Co., E. I ... 43
ENVELOPE MACHINES.
Potdevin Machine Co ... 9
F. L. Smith Machine Co ... 83
FAN AND BLOWING SYSTEMS.
B. F. Sturtevant Co ... 81
FAN PUMPS.
Valley Iron Works ... —
FELTS AND JACKETS.
Albany Felt Co ... —
Appleton Woolen Mills ... 9
Bulkley, Dunton & Co ... 73
Draper Bros. Co ... 84
Fitchburg Duck Mills ... 2
F. C. Huyck & Son ... 13
Knox Woolen Company ... 73
Lockport Felt Co ... —
Orr Felt & Blanket Co ... 75
Shuler, Beninghofen Co ... 92
Waterbury Felt Co ... 82
Waterbury & Sons Co., H ... 86
FELT ROLLS.
Rodney Hunt Machine Co ... —
FILTERING SYSTEMS.
Norwood Engineering Co ... 5
FLOOR COVERINGS.
L. Sonneborn & Sons ... 84
FLOOR HARDENER (Concrete).
L. Sonneborn & Sons ... 84
FOLDING MACHINES.
Hudson-Sharp Machine Co ... —
FOURDRINIER WIRES.
Appleton Wire Works ... 92
Buchanan & Bolt Wire Co ... 79
Caoble Excelsior Wire Mfg. Co ... 92
Cheney, Bigelow Wire Works ... 90
Eastwood Wire Mfg. Co ... 92
Green Bay Wire Works ... —
Lindsay Wire Weaving Co ... 83
Joseph O'Neill Wire Works ... 83
The W. S. Tyler Company ... 91
FURNACE (Automatic).
Murphy Iron Works ... 80
GAUGES (Caliper).
Farrel Foundry & Machine Co ... —
GAUGES (Pressure, Indicating and Recording).
Bristol Co., The ... 15
GUMMING AND GLUING MACHINERY.
Potdevin Machine Co ... 9
HOISTS (ELECTRIC).
Shepard Electric Crane & Hoist Co ... 16
INVESTMENTS.
Taylor, Bates & Co ... 73
IRON EXTRACTORS.
Oakes Co., Roland ... 12
KNIVES, ETC.
Bolton & Sons, Inc., J. W ... 9
Dowd Knife Works, R. J ... 19
Machinery Co. of America ... —
LUBRICANTS.
Vacuum Oil Co ... —
MICROMETERS.
Ashcroft Mfg. Co ... 82
E. J. Cady Co ... 45
Foreign Paper Mills, Inc ... 3
MICROMETER (CALIPERS.)
Lobdell Car Wheel Co ... 50
MILL COGS.
N. P. Bowsher & Co ... 92
MOTORS.
B. F. Perkins & Sons, Inc ... 11
MOTOR TRUCKS.
Packard Motor Car Co ... —
OILS AND GREASE.
Vacuum Oil Co ... —
PACKING.
Jenkins Bros ... 4
PAPER BAG MACHINERY.
Potdevin Machine Co ... 9
Smith & Winchester Mfg. Co ... 10
PAPER BAG MANUFACTURERS.
Lawrence Bag Co ... 7
Schorsch & Co. ... 75
PAPER BOX BOARDS.
C. L. La Boiteaux Co ... 5
PAPER CORES.
Elixman Paper Core Co ... 16
PAPER CUTTERS.
Hamblet Machine Co ... 16

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CLASSIFIED INDEX TO ADVERTISEMENTS

PAPER DEALERS. Page
Fernstrom Paper Co. —
R. F. Hammond Front Cover

PAPER EXPORTERS.
Hudson Trading Co. 2
Katzenstein & Keene, Inc. 4
Parsons Trading Co. Front Cover

PAPER MANUFACTURERS.
Bayless Mfg. Co. 82
Becker Paper Corporation 47
Brown Company 5
Collins Mfg. Co. 7
Diamond State Fibre Co. Front Cover
Eastern Mfg. Co. 78
Eaton Dikeman Co. —
Fort Howard Paper Co. 11
Franklin Paper Co. 86
Hammermill Paper Co. 35
Hanna Paper Corporation 5
Howard Paper Co. 69
Missisquoi Pulp & Paper Co. 79
Mountain Mill Paper Co. 69
St. Regis Paper Co. 5
Sherman Paper Co. 81
Stratford Paper Co. 81
Wausau Sulphate Fiber Co. —
West Virginia Pulp & Paper Co. 69

PAPER AND PULP MACHINERY.
Appleton Machine Co. 18
Bagley & Sewell Co. —
Baker Mfg. Co. 87
Beloit Iron Works 37
Bird Machine Works 31
Black-Clawson Co. 11
Clark-Aiken Co. 10
Frank H. Davis 77
Downingtown Mfg. Co. 90
Glens Falls Machine Works 14
Hudson-Sharp Machine Co. —
Improved Paper Machinery 19
Sandy Hill Iron & Brass Co. —
Shartle Bros. Machine Co. 77 and 78
Smith & Winchester Mfg. Co. 10
Trimbey Machine Works 50
Valley Iron Works —
Waterville Iron Works 2

PAPER MILL AGENTS.
Dillon & Barnes 86
McIver, Dana T. 2

PAPER AND PULP MILL BROKERS.
Gibbs-Brower Co. —

PAPER SPECIALIST.
Charles W. Bell 81

PAPER STOCK.
Atterbury Bros. Front Cover
Butterworth & Co., Inc., E. 80
Castle, Gotthell & Overton 84
Gumbinsky Bros. 92
Hicks, Daniel M. 86
Mendelson Bros. Paper Stock Co. 81
Penn Paper & Stock Co. 86
Salomon Bros. & Co. 86
Train-Smith Co. Front Cover

PAPER TESTERS.
Ashcroft Mfg. Co. 82
E. J. Cady Co. 45
Foreign Paper Mills, Inc. 3
B. F. Perkins & Sons, Inc. 11
Thwing Instrument Co. 3
Valley Iron Works —

PAPER TUBE MACHINERY.
Dietz Machine Works 8
Grissinger Machine Works 84

PAPER WAXING MACHINERY.
Farrel Foundry & Machine Co. —
Potdevin Machine Works 9

PERFORATING MACHINES.
Dietz Machine Works 8

PERFORATED METAL.
Harrington & King Perforating Co. 75
Hendrick Mfg. Co. 9
Manhattan Perforated Metal Co. 86
Charles Mundt & Sons 83

PIPE (Genuine Wrought Iron).
A. M. Byers Co. —
Reading Iron Co. 39

PRESS ROLLS.
Rodney Hunt Machine Co. —

PLUGS.
Menasha Wood Split Pulley Co. 78

PLUGS (Wood).
O. L. Bartlett 11

PULP STONES.
International Pulp Stone Co. Front Cover
Lombard & Co. 91

PUMPS.
Frederick Iron & Steel Co. —
Hayton Pump & Blower Co. —
Hudson-Sharp Machine Co. —
Shartle Bros. 77 and 78

PUMPS (Vacuum).
The Nash Engineering Co. 81

PRESSURE BULKERS.
B. F. Perkins & Sons, Inc. 11

RAG CUTTERS.
B. F. Perkins & Sons, Inc. 11
Taylor, Stiles & Co. 17

RECORDING INSTRUMENTS.
Bristol Co. 15

RECORDING TACHOMETERS.
Bristol Co. 15

ROLL GRINDERS.
Lobdell Car Wheel Co. 50

ROSIN.
Hercules Powder Co. —

ROSIN SIZE.
Arabol Mfg. Co. 91
Paper Makers Chemical Co. 82
Western Paper Makers Chemical Co. 82

ROTARY BLEACHING BOILERS.
Biggs Boiler Works Co. —

SAVEALLS.
Bird Machine Co. 31

SATIN WHITE.
The Kalbfleisch Corp. —
Paper Makers Chemical Co. 82
Western Paper Makers Chemical Co. 82

SCALES (Paper).
Fred Baker —
E. J. Cady & Co. 45
Foreign Paper Mills, Inc. 3

SCREENS.
Beloit Iron Works 37
Bird Machine Co. 31
Central Mfg. Co. 12
Wm. A. Hardy & Sons Co. 83
Union Screen Plate Co. 89

SHREDDERS (Pulp and Paper).
Valley Iron Works —

SKYLIGHTS.
E. Van Noorden & Co. 91

SLASHERS.
Ryther & Pringle Co. 17

SLITTERS AND REWINDERS.
Beloit Iron Works 37
C. Benninghofen & Son 80
Cameron Machine Works 86
Dietz Machine Works 8
Grissinger Machine Works 84
Hudson-Sharp Machine Co. —
Samuel M. Langston Co. 86

SPLICING TISSUES.
E. M. Sargeant Co. —

STARCH.
Corn Products Refining Co. 10

STEAM SPECIALTIES.
Crane Co. 81
Open Coil Heater & Purifier Co. —

STITCHING MACHINERY.
Saranac Machine Co. 87

STOCK REGULATORS. Page
Trimbey Machine Co. 50

STRAW MAKING.
Samuel M. Langston Co. 86

SUCTION BOX COVERS.
Menasha Wood Split Pulley Co. 78

SULPHITE, BLEACHED AND UNBLEACHED.
J. Andersen & Co. 4 and 33
The Borregaard Co., Inc. 73
Brown Co. 5
Bulkley, Dunton & Co. 20
Butterworth & Co., Inc., E. 80
Canadian Robert Dollar Co. 4
Columbian Paper Co., Inc. 82
Craig-Becker Co., Inc. 3
Eastern Manufacturing Co. 78
Mead Sales Co., The 15
Price & Pierce, Ltd. Front Cover
Pulp & Paper Trading Co. 79

SULPHUR.
Texas Gulf Sulphur Co. 7
Union Sulphur Co. 84

TANKS (Water, Oil, etc.).
Biggs Boiler Works Co. —
W. E. Caldwell Co. —
New England Tank & Tower Co. 91
Stearns Lumber Co., A. T. —
Tokheim Oil Tank & Pump Co. —
Woolford Wood Tank Co. 84

TEMPERATURE RECORDING.
Bristol Co. 15

TIMBER ESTIMATES.
The Bradley Sales Agency 80
James W. Sewall 80

TIME RECORDS.
Bristol Co. 15

TRANSMISSION MACHINERY.
H. W. Caldwell Co. 3
Hill Clutch Co. —
Reeves Pulley Co. 79
Weller Mfg. Co. —

TURPENTINE.
Hercules Powder Co. —

TWINES.
American Manufacturing Co. 18
National Patent Reed Sales Co. —

VALVES.
Crane Co. 81
Jenkins Bros. 4

VAPOR ABSORPTION SYSTEMS.
Ross Engineering Co. 80

VENTILATING FANS.
B. F. Perkins & Sons, Inc. 11
Ross Engineering Co. 80

VEGETABLE PARCHMENT PAPERS.
Kalamazoo Vegetable Parchment Co. 69

WAX PAPERS.
Lindsay Bros., Inc. 82

WOOD FLOUR.
Union Wood Flour Co. 86

WOOD PULP IMPORTERS.
American Wood Pulp Corp. 82
J. Andersen & Co. 4 and 33
Ira L. Beebe & Co. 91
The Borregaard Co., Inc. 73
Bulkley, Dunton & Co. 20
M. Gottesman & Co. —
Hammond, R. F. Front Cover
E. J. Keller Company 91
Lagerloef Trading Co. 12
Mead Sales Co., The 15
Nilsen, Lyon & Co., Inc. 37
A. J. Pagel & Co., Inc. 27
J. F. Patten & Co., Inc. 8
Perkins-Goodwin Co. 47
Scandinavian-American Trading Company, Front Cover

WOOD ROLLS.
Rodney Hunt Machine Co. —

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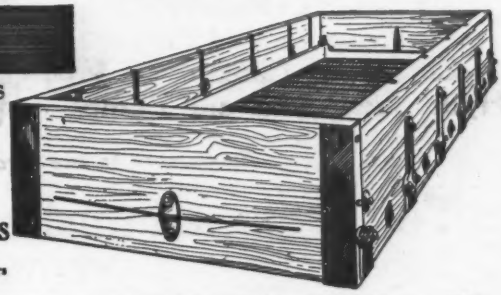

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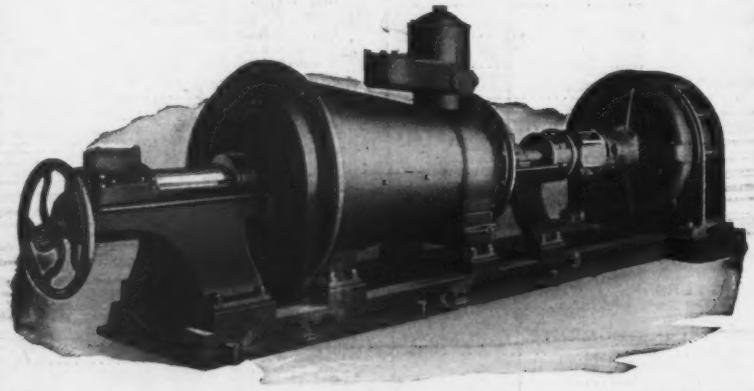

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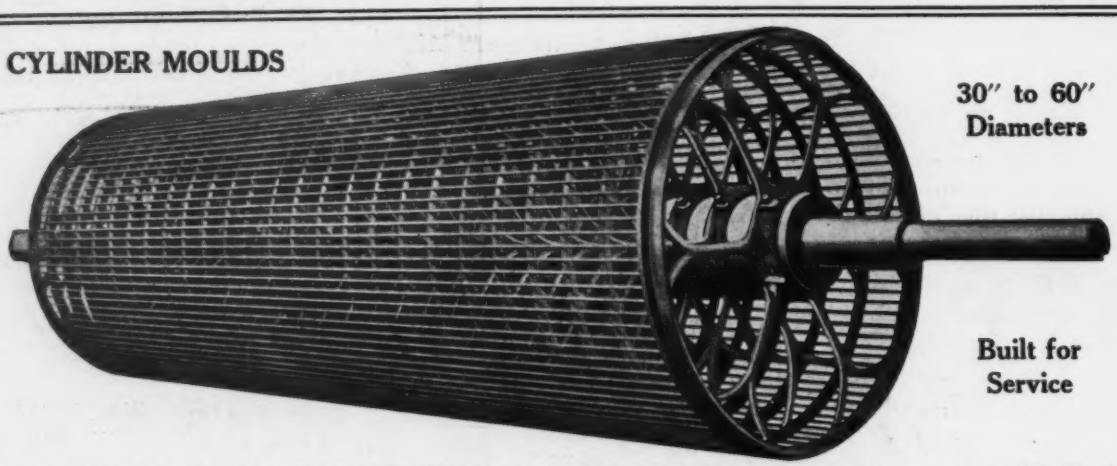

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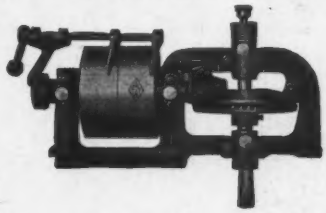

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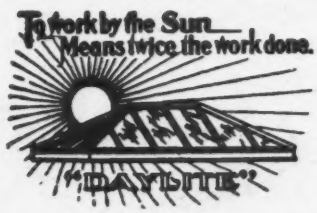

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